RADIOCARBON DATES I

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INTRODUCTION

This is the first date list from the Radiocarbon Dating Laboratory of the University of Helsinki. The laboratory was founded in 1968 and has been operating since then. The equipment for the laboratory was bought with a grant from The National Science Research Council. This list includes all dates up to about number Hel-750 and covers the time from 1968 to 1975.

The original equipment was a commercial one obtained from Radiocarbon Inc. consisting mainly of a sample combustion unit, a flow-reactor for methane syntesis and a one-detector counting system. The detector operated at 1 atm gave a background of 4.7 cpm and a net modern countrate of 13.5 cpm. A better shielding of the detector included in early 1971 brought down the background countrate to 3.1 cpm. Later in 1971 the original detector was replaced by 2 detectors (1.0 l and 0.5 l of volume) of the Östlund-Engstrand type with small modifications. Typical values for these two detectors were for background 2.4 and 1.5 cpm and for modern 13.2 and 6.8 cpm respectively.

The pretreatment of wood, peat, charcoal and sediment samples was a standard alkali-acid procedure using NaOH and HCl at elevated temperature, the concentrations varying in the NaOH treatment from 0.5 - 2 % as well as in the HCl treatment from 2 - 5 %.
Shell samples were washed in destilled water in an ultrasonic bath after mechanical cleaning. The CO_2 gas was then collected from the innermost 80 % of the shells by treating with HCl.
For the first bone-samples reported in this list the method of extracting the collagen was that reported by Sellstedt et al. (1967). Later the Longin method (Longin 1971) was introduced, though with special attention paid to the removing of humus material.

Dates reported are based on 95 % of the activity of NBS oxalic acid and the Libby half-life 5568 ± 30 a. Errors quoted (± 1 δ) include counting uncertainties for sample, standard and background and uncertainty in the half-life. $\delta^{13}C$ values reported in a few cases are relative to the PDB standard and are based on measurements made by R. Ryhage, Karolinska Institutet, Stockholm. No correction for isotopic fractionation was however applied to the dates.

The date list is compiled according to laboratory number. Series of sample from the same site are however grouped together.
At the end of the report an index according to submitters is included.

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LAKE SAIMAA SERIES, FINLAND

The following dates on mud (gyttja), peat and wood from shore mires and small lakes provide data on shoreline displacement of the Saimaa lake complex (Saarnisto 1970). Samples collected 1968 and 1969 by M. Saarnisto using a piston corer. Most samples are composites from equivalent stratigraphic levels in two or more replicate cores.

Hel-8 LINNANSUO, IMATRA — 5200 ± 140 / 3250 BC

61°11'N, 28°48'E (6786.00, 595.58), 63 m a.s.l.

Wood, 65 cm depth.

Comment(MS): Wood from a bog, Linnansuo, beneath flood sediment (clay and silt) deposited on bog at the formation time of the present outlet (Vuoksi R.) of the Saimaa lake complex. Another date from wood 2 m apart from equivalent stratigraphic level gives the age 5183 ± 56 (P-1542). The dates show the maximum age of Vuoksi, if erosion has not occured.

Hel-9 VARPAISLAMPI, RISTIINA — 6850 ± 180 / 4900 BC

61°25'N, 27°13'E (6812.51, 511.62), 85.5 m a.s.l.

Mud, 623-628 cm depth.

Comment(MS): Coarse mud from the bottom of a pond, Varpaislampi, in the Matkuslampi outlet of Saimaa. Just above this sample (617-623 cm depth) there is another date, 6800 ± 120 (St-2942).

Hel-10 IMMOLANLAMPI, JOROINEN — 5270 ± 220 / 3320 BC

62°09'N, 28°00'E (6894.06, 552.47), 81.1 m a.s.l.

Mud, 230-237 cm depth.

Comment(MS): Silty mud from Immolanlampi shore mire. The formation of the present outlet (Vuoksi R.) of Saimaa.

Hel-13 HEIMOJÄRVI, JOUTSENO — 5940 ± 160 / 3990 BC

61°08'N, 28°23'E (6779.74, 574.66), 76.9 m a.s.l.

Mud, 128-133 cm depth.

See Hel-35.

Hel-35 HEIMOJÄRVI 2 — 4860 ± 150 / 2910 BC

Mud, 115-121 cm depth.

Comment(MS): On Heimojärvi shore mire, between Phragmites-Carex peat

containing wood remains at a depth of 120 to 130 cm there is a muddy layer of sand connected with fluctuations of the water level of Saimaa. The dates are below (Hel-13) and above (Hel-35) this layer. The upper date gives the age of the formation of the present outlet (Vuoksi R.) of Saimaa.

Hel-21 KIVISUO, PIELAVESI 5130 ± 130
3180 BC

63°26'N, 26°36'E (7036.76, 480.61), 111.9 m a.s.l.

Mud, 237-243 cm depth.

Comment(MS): Mud and Phragmites peat from a bog, Kivisuo. The paludification of the northern outlet of Saimaa at Pielavesi. A date below Hel-21 (243-250 cm depth) from clay-mud gives the age 5345 ± 100 (St-2945).

Hel-22 TANULAMPI, RANTASALMI 6050 ± 160
4100 BC

62°12'N, 28°03'E (6899.56, 555.00), 81.3 m a.s.l.

Mud, 447-452 cm depth.

Comment(MS): Coarse mud from Tanulampi shore mire. The rise of the water level of Saimaa.

Hel-34 TANULAMPI 2 5190 ± 160
3240 BC

Mud, 435-440 cm depth.

Comment(MS): Silty mud from Tanulampi shore mire. The formation of the present outlet (Vuoksi R.) of Saimaa. The immigration of Picea in the Varkaus area (see also Glückert 1976).

Hel-27 SARKALAHTI, LEPPÄVIRTA 2460 ± 150
510 BC

62°20'N, 28°02'E (6915.06, 553.52), 81.7 m a.s.l.

Clay-mud mixed with Equisetum, 185-191 cm depth.

Comment(MS): The overgrowth of Sarkalahti shore mire after the formation of the southern outlets of Saimaa. The site is about 13 m below the maximum level of Saimaa.

HOLMGÅRD SERIES, RUOTSINPYHTÄÄ, FINLAND

Charcoal samples from a Stone Age dwelling site with comb ceramic style II (Meinander 1971).

Subm. 1969 by C.F. Meinander.

Hel-11 HOLMGÅRD 1 — 5260 ± 145 / 3310 BC

Charcoal from hearth, KM 13957:8

Hel-19 HOLMGÅRD 2 — 5460 ± 150 / 3510 BC

Charcoal from hearth, KM 13957:21

ALESTALO SERIES, ORIMATTILA, FINLAND

Samples subm. 1969 by C.F. Meinander.

Hel-12 ALESTALO 1 — 5370 ± 140 / 3420 BC

Wood, KM 14697:6.

Comment (CFM): Bog find with comb ceramic style II and Trapa natans (Meinander 1971).

Hel-24 ALESTALO 2 — 4840 ± 190 / 2890 BC

Trapa natans-rich gyttja, KM 14697:5

Hel-13 See LAKE SAIMAA SERIES Hel-8.

Hel-14 — 1180 ± 120 / AD 770

Wood, a piece of ski.

Subm. 1968 by N. Teir.

DJUPVIK SERIES, LYNGEN, NORWAY

69°45'N, 20°30'E, 58 m a.s.l.

Coll. 1963 and subm. 1968 by R. Ruuhijärvi.

Hel-15 DJUPVIK 1 — 1520 ± 120 / AD 430

Peat, 46-49 cm depth.

Comment (RR): The mire in the maritime birch forest region has been used for peat cutting. The series was taken from an open pit. Pollen analysis: Betula 69%, Pinus 30%, Alnus 1%, NAP 33%. The time of increasing Betula and decreasing Pinus.

Hel-16 DJUPVIK 2 — 4890 ± 160 / 2940 BC

Peat, 110-112 cm depth.

Comment (RR): Pollen analysis: Betula 46%, Pinus 50%, Alnus 4%, NAP 48%. Birch/pine shift.

Hel-17 BRUMYRE, VARANGERBOTTEN, NORWAY 4270 ± 140
2320 BC

70°11'N, 28°30'E, 37.4 m a.s.l.
Coll. 1962 and subm. 1968 by R. Ruuhijärvi.
Peat, 165-175 cm depth.
Comment(RR): Palsa mire in the Betula forest region north of the road. Pollen analysis: Betula 49%, Pinus 51%, NAP 60%. Birch-pine forest period. The beginning of the Sphagnum-peat phase.

HENRIKVIK SERIES, KVALÖY, TROMS, NORWAY

69°11'N, 18°39'E, c. 70 m a.s.l.
Coll. 1963 and subm. 1968 by R. Ruuhijärvi.
The surrounding area belongs to the maritime Betula-forest region.

Hel-18 HENRIKVIK 1 2500 ± 130
550 BC
Wood (Betula) taken from an open pit just above mineral ground, 130 cm depth.
Comment(RR): Dates the beginning of the paludification in the sloping fen. Pollen analysis: Betula 93%, Pinus 7%, NAP 53%.

Hel-25 HENRIKVIK 2 1500 ± 130
AD 450
Peat from an open pit in the sloping fen, 68-70 cm depth.
Pollen analysis: Betula 88%, Pinus 11%, NAP 62%.

Hel-19 See HOLMGÅRD SERIES Hel-11

KOLMHAARA SERIES, HONKILAHTI, FINLAND

Coll. 1955 and subm. 1969 by C.F. Meinander.
General comment(CFM): Dwelling site with comb ceramic style II and Jäkärlä style. At the site there is also younger archaeological material (Bronze Age). (Meinander 1971)

Hel-20 5420 ± 150
3470 BC
Charcoal from hearth, KM 15218:253

Hel-38 2360 ± 140
410 BC
Charcoal from base of hearth, KM 13852:197

Hel-39 5440 ± 160
3490 BC

Charcoal from base hearth, KM 13852:198

Hel-42 2680 ± 140
730 BC

Charcoal from cultural layer, KM 13852:199

Hel-43 2450 ± 140
500 BC

Charcoal from base of hearth, KM 13852:200

Hel-21 - 22 See LAKE SAIMAA SERIES Hel-8

Hel-23 HERAJOKI, RIIHIMÄKI, FINLAND 1950 ± 130
AD 0

Wood, piece of a ski.
Subm. 1968 by V. Auer. Pollen analysis made earlier (Auer 1928).

Hel-24 See ALESTALO SERIES Hel-12

Hel-25 See HENRIKVIK SERIES Hel-18

Hel-27 See LAKE SAIMAA SERIES Hel-8

SAUNANIEMI SERIES, SUONENJOKI, FINLAND

Subm. by C.F. Meinander.
Comment(CFM): Dwelling site with comb ceramic style II:2 (Meinander 1971).

Hel-28 SAUNANIEMI 1 5210 ± 150
3260 BC

Charcoal from hearth, KM 14821:1

Hel-29 SAUNANIEMI 2 4980 ± 150
3030 BC

Charcoal from hearth, KM 14821:82

Hel-30 AUTIONIEMI, HANKASALMI, FINLAND 5510 ± 170
3560 BC

Subm. by C.F. Meinander.
Charcoal from hearth, 30 cm depth, KM 14863:20
Comment(CFM): Dwelling site with comb ceramic style II (Meinander 1971).

KIELLAJOKI SERIES, INARI, FINLAND

Coll. and subm. 1968 by M. Seppälä. (Seppälä 1971a, 1971b)

Hel-31 KIE 1 7160 ± 200
5210 BC

69°19'N, 26°44'E

Charcoal, 55-60 cm depth.

Sample taken by digging below the podzol profile of a sanddune.

Compare with Hel-298.

Hel-33 KIE 3 9740 ± 280
7790 BC

69°20'N, 26°43'E

Silt with plant remanants, 180 cm depth.

Sample taken by digging from the mineral core of a palsa.

Comment(MS): Shows the very beginning of peat formation in the area.

Compare with Hel-121. (See also Hyvärinen 1973)

Hel-34 - 35 See LAKE SAIMAA SERIES Hel-8

Hel-36 KEURUU, FINLAND 730 ± 130
AD 1220

Wooden remains of a boat, KM 7791:1

Subm. by C.F. Meinander.

Hel-37 KEURUU, FINLAND 670 ± 120
AD 1280

Wooden remains of a boat, KM 7791:1

Hel-38 - 39 See KOLMHAARA SERIES Hel-20

Hel-40 TRULLVATNET, NORDAUSTLANDET, SPITSBERGEN 2010 ± 130
60 BC

80°N, 18°30'E, 1 m a.s.l.

Mud, 92.5-97.5 cm depth.

Coll. and subm. 1969 by H. Hyvärinen.

Comment(HH): Sample dates the base of local pollen zone III and is consistent with other dates (St-2666, -2665, -2776, -2453) from the same core. (Hyvärinen 1970)

Hel-41 THE CANARIES 2690 ± 130
740 BC

Charcoal, carbon-14-3-68

Subm. 1969 by H. Hausen.

Hel-42 - 43 See KOLMHAARA SERIES Hel-20

NUMMENHARJU SERIES, SAUVO, FINLAND

Coll. 1965 and subm. 1969 by C.F. Meinander.
General comment(CFM): Dwelling site with comb ceramic, Jäkärlä style. (Meinander 1971)

Hel-44 — 5310 ± 160 / 3360 BC
Charcoal from hearth, KM 16735:87

Hel-45 — 5500 ± 160 / 3550 BC
Charcoal from hearth, KM 16735:10

Hel-46 — 5830 ± 140 / 3880 BC
Charcoal from hearth, KM 16735:137

Hel-47 — 5750 ± 160 / 3800 BC
Charcoal from base of hearth, KM 16735:66

Hel-48 — 6000 ± 180 / 4050 BC
Charcoal from hearth, KM 17066:169

Hel-63 — 5030 ± 180 / 3080 BC
Charcoal, KM 16735:268

Hel-49 KONNUNSUO, JOUTSENO, FINLAND — 9690 ± 230 / 7740 BC
61°02'N, 28°27'E, 50-53 m a.s.l.
Peat, 292.5-295.0 cm depth.
Coll. 1964 with spade and knife and subm. 1969 by R. Ruuhijärvi and K. Tolonen.
Comment(KT): From the beginning of zone V. The date is about 500 years too old when compared with other datings from the same monolith. (Tolonen and Ruuhijärvi 1976)

HAUKKASUO SERIES, VALKEALA, FINLAND

60°54'N, 26°57'E, 55 m a.s.l.
Coll. 1964 and 1969 with spade, knife or large Reissinger corer and subm. 1969 and 1970 by K. Tolonen and R. Ruuhijärvi.
General comment(eds.): The dates provide data for standard pollen diagrams from the Salpausselkä region of southern Finland. (Tolonen and Ruuhijärvi 1976)

Hel-50 HAUK 7 — 8440 ± 230 / 6490 BC

Peat, 232-234 cm depth.

Comment(KT): Zone VI - VII. The date is probably some 1000 years too old, when compared with other datings from the same monolith.

Hel-51 HAUK 8 — 1670 ± 140 / AD 280

Peat, 32-33 cm depth.

Comment(KT): Zone IX. Stratigraphically consistent. The occurrence of cereals begins within the dated level.

Hel-95A HAUK 13 — 9610 ± 260 / 7660 BC

Peat, 365-366 cm depth.

Acid treatment only (lab.).

Hel-95B HAUK 13 — 9730 ± 230 / 7780 BC

Peat, 365-366 cm depth.

Comment(KT): According to diatom and pollen studies the basal Bryales peat of the bog was formed after the isolation of the basin from (Yoldia) sea in the early zone IV close to the zone III/IV boundary.

NaOH and acid treatment (lab.), comp. Hel-95A.

Hel-96 HAUK 14A — 9540 ± 260 / 7590 BC

Gyttja and Equisetum, 377-378 cm depth.

Hel-117 HAUK 12 — 9200 ± 260 / 7250 BC

Peat, 354-355 cm depth.

Comment(KT): Zone IV. Stratigraphically consistent.

Hel-118 HAUK 11 — 8980 ± 250 / 7030 BC

Peat, 331-332 cm depth.

Comment(KT): Early zone IV. Stratigraphically consistent.

PIILONSUO SERIES, JANAKKALA, FINLAND

60°47'N, 24°39'E, 92-94 m a.s.l.

Coll. 1965 with spade and knife by K. Tolonen and subm. 1969 by R. Ruuhijärvi. (Tolonen and Ruuhijärvi 1976)

Hel-52 3790 ± 150
1840 BC

Peat, 100-101 cm depth.

Comment(KT): Zone VIII. Stratigraphically consistent. Carpinus.

Hel-53 1110 ± 140
AD 840

Peat, 45-46 cm depth.

Comment(KT): Zone IX. Stratigraphically consistent. Increase in the occurrence of cereals and weeds.

LAKIASSUO SERIES, VIHTI, FINLAND

60°23'N, 24°26'E (669942/52406), 69.8 m a.s.l.

Coll. and subm. 1969 by G. Glückert. (Glückert 1970)

Hel-54 9320 ± 230
7370 BC

Gyttja, 490-500 cm depth.

Comment(GG): The end of the preboreal Betula-maximum and zone boundary IV/V (approx.) or the limit between Betula- and Pinus-maximum.

Hel-57 4010 ± 170
2060 BC

Wood (in Carex-Sphagnum peat), 325-335 cm depth.

Comment(GG): The beginning of the spread of Picea in South Finland.

PILLISUO SERIES, LOHJA, FINLAND

60°18'N, 24°11'E (668745/51042), 78.6 m a.s.l.

Coll. and subm. 1969 by G. Glückert. (Glückert 1970)

Hel-55 9470 ± 200
7520 BC

Gyttja, 650-665 cm depth.

Comment(GG): The middle of the preboreal Betula-maximum.

Hel-148 3500 ± 120
1550 BC

Peat, 360-370 cm depth.

Comment(GG): Immigration of Picea in the area of Lohja.

KIEVARINSUO SERIES, KARJAA, FINLAND

60°05'N, 23°45'E (666450/48612), 44.5 m a.s.l.

Coll. and subm. 1969 by G. Glückert. (Glückert 1970)

Hel-56 6640 ± 190
4690 BC

Gyttja, 395-410 cm depth.
Comment(GG): The rise of Alnus, the beginning of the first Littorina transgression in South Finland.

Hel-149 3110 ± 120
1160 BC

Peat, 320-330 cm depth.
Comment(GG): Immigration of Picea in the area of Karjaa.

Hel-57 See LAKIASSUO SERIES Hel-54

NÄLKÖÖNSUO SERIES, LOHJA, FINLAND

60°18'N, 24°12'E, 78-80 m a.s.l.
Coll. 1967 and 1969 with spade, knife or large Reissinger corer by K. Tolonen and subm. 1969 and 1970 by R. Ruuhijärvi and K. Tolonen.
General comment(eds.): The dates provide data for standard pollen diagrams from the Salpausselkä region of Southern Finland.
(Tolonen and Ruuhijärvi 1976)

Hel-58 NÄLK 11 1840 ± 170
AD 110

Peat, 225-230 cm depth.
Comment(KT): Zone IX. Stratigraphically consistent.

Hel-59 NÄLK 12 960 ± 150
AD 990

Peat, 145-150 cm depth.
Comment(KT): Zone IX. Stratigraphically consistent.

Hel-60 NÄLK 13 recent

Peat, 60-65 cm depth.
Comment(KT): Zone IX. The real age of the sample may be some 100-200 years, when the probable height growth in the weakly decomposed Sphagnum fuscum hummock is considered, cf. Tolonen (1977).

Hel-61 NÄLK 14 7510 ± 270
5560 BC

Peat, 495-500 cm depth.
Comment(KT): Zone VI. Stratigraphically consistent.

Hel-101 I NÄ 14 6380 ± 190
4430 BC

CS-peat, 375-380 cm depth.

Comment(KT): Stratigraphically consistent. Zone VI/VII boundary and Tilia+, (uncertain Picea tail).

Hel-103 III NÄ 1a 9370 ± 250
7420 BC

Muddy silt, 624-635 cm depth.

Comment(KT): Zone IV. Probably too young.

Hel-104 III NÄ 2a 9550 ± 260
7600 BC

Coarse detritus gyttja, 606-609 cm depth.

Comment(KT): Zone IV. Stratigraphically consistent.

Hel-62 MAANSELÄNSUO, KUUSAMO, FINLAND 8890 ± 290
6940 BC

65°37'N, 29°37'E, 248 m a.s.l.

Plant remains, 190-200 cm depth.

Plant remains washed out of finesand from the bottom of a mire.

Coll. (digging) and subm. 1966 by Y. Vasari.

Comment(YV): Age is practically the same as that of organic remains from the overlying sand layer dated earlier to 9100 ± 220 BP (I-1699, Vasari 1965). It is also within the limits of error of two other datings, 8500 ± 720 (I-3010) and 8320 ± 580 (I-3011) of supposedly older horizons from the same sedimentation basin.

Hel-63 See NUMMENHARJU SERIES Hel-44

MUNASUO SERIES, PYHTÄÄ, FINLAND

60°37'N, 26°38'E, 21.8 m a.s.l.

Coll. 1968 with large russian peat sampler and subm. 1969 by K. Tolonen.

General comment(eds.): The dates are associated with the regeneration of raised bogs and they also provide data for standard pollen diagrams from Southern Finland.(Tolonen and Ruuhijärvi 1976, Tolonen 1977).

Hel-64 MU 1 420 ± 160
AD 1530

Peat, 135-140 cm depth.

Comment(KT): Zone IX, Cerealia+. The end of hollow stage.

stages of palsas and they also provide data for forest historical zones in Northern Finland.

Hel-70 113/69 MS — 9180 ± 300 / 7230 BC

Bryales-Carex peat above silty bottom, 330-340 cm depth.

Comment(MS): Pollen analysis indicates lowest part of the older Betula period.

Hel-138 82-83/69 MS — 2180 ± 140 / 230 BC

Deciduous Sphagnum peat, 25-30 cm depth.

Comment(MS): Pollen analysis indicates beginning of upper Betula period.

Hel-139 84/69 MS — 4270 ± 160 / 2320 BC

Deciduous Carex peat, 40-50 cm depth.

Comment(MS): Pollen analysis indicates upper part of Pinus period.

Hel-140 89/69 MS — 5750 ± 190 / 3800 BC

Bryales-Sphagnum peat, 90-100 cm depth.

Comment(MS): Pollen analysis indicates middle part of Pinus period.

Hel-141 97-98/69 MS — 7670 ± 220 / 5720 BC

Nanolignidi Sphagnum peat, 175-185 cm depth.

Comment(MS): Pollen analysis indicates to border between Betula and Pinus period.

SYYSJÄRVI SERIES I, INARI, FINLAND

69°18'N, 27°0'E, 214 m a.s.l.

Coll. and subm. 1969 by M. Salmi.

General comment(eds.): The dates are associated with the development stages of ridgepalsas and they also provide data for forest historical zones in Northern Finland. (Salmi 1972)

Hel-71 69/69 MS — 7490 ± 230 / 5540 BC

Bryales peat above silty bottom, 400-415 cm depth.

Comment(MS): Pollen analysis indicates to the lowest part of the older Betula period. The age is younger than supposed.

Hel-92 44-45/69 MS — 4800 ± 180 / 2850 BC

Sphagnum peat, 45-55 cm depth.

Comment(MS): Pollen analysis indicates the upper part of Pinus period.

Hel-93 56-57/69 MS 7470 ± 220
5520 BC

Carex-Sphagnum peat, 170-180 cm depth.
Comment(MS): Pollen analysis indicates the middle part of Pinus period.

Hel-94 67-68/69 MS 7500 ± 220
5550 BC

Carex-Sphagnum peat, 275-285 cm depth.
Comment(MS): Pollen analysis indicates sample taken from the border between Betula and Pinus period. The age is younger than supposed.

SONKAJA SERIES, ILOMANTSI, FINLAND

62°45'N, 30°45'E, 180.8 m a.s.l.
Coll. and subm. 1970 and 1975 by H. Hyvärinen.
(Hyvärinen 1971, 1972, 1973)

Hel-73 SO 3 8870 ± 250
6920 BC

Mud (dy), 106-109 cm depth.
Comment(HH): Sample relates to Birch pollen zone and appears slightly too young, although considering error margins, it falls within the expected age range of 9000 - 10000 BP.

Hel-85 SO 1 9850 ± 260
7900 BC

Silty mud (gyttja), 111.5-114.0 cm depth.
Comment(HH): Sample relates to Birch pollen zone and falls within the expected age range of 9000 - 10000 BP.

Hel-86 SO 2 6790 ± 210
4840 BC

Mud (dy), 98.5-101.0 cm depth.
Comment(HH): Sample was meant to date pollen zone transition Birch/Pine, but appears much too young and is inconsistent with Hel-85 and Hel-73. Possible explanation is contamination or interval of very slow deposition or non-deposition.

Hel-744 SO II/4 9350 ± 280
7400 BC

Bryales peat, 280-285 cm depth.

Comment(HH): Sample consists of fragments of B-peat incorporated in sandy sediment. Pollen stratigraphical position is base of Birch zone

near Birch zone/Artemisia zone transition. The date appears too young in wiew of pollen stratigraphy and is inconsistent with Hel-842, 9360 ± 190 (depth 102.5-105.0 cm). Cf. comment on sample Hel-745 immediately below in stratigraphy.

Hel-745 SO II/5 — 9840 ± 180, 7890 BC

Clay-gyttja, 290-300 cm depth.

Comment(HH): Sample relates to Artemisia zone and appears slightly too young. Humic fraction from the same sample was dated at a still younger age 9170 ± 180 (Hel-788), thus contamination by young humus is suspected. The dated horizon is intercalated in sandy sediments, where postdepositional circulation of water may have occured.

Hel-74 ABO I, KÄRSÄMÄKI, TURKU, FINLAND — 5080 ± 180, 3130 BC

60°29'N, 22°17'E

Shell gravel, 200 cm depth.

Coll. 1969 and subm. 1970 by M. Seppälä.

For comment see Hel-145.

Hel-75 VIERIKKO, KURIKKA, FINLAND — recent

Charcoal from hearth, KM 16162:558

Subm. 1969 by V. Luho.

Hel-76 VIERIKKO, KURIKKA, FINLAND — recent

Charcoal from hearth, KM 16162:559

Subm. 1969 by V. Luho.

Hel-77 JÄNISKALLIO, KURIKKA, FINLAND — 4370 ± 140, 2420 BC

Charcoal from hearth, KM 16946:545

Subm. 1969 by V. Luho.

Hel-78 JÄNISKALLIO, KURIKKA, FINLAND — 3410 ± 150, 1460 BC

Charcoal from cultural layer, KM 16946:546

Subm. 1969 by V. Luho.

Hel-79 PAJARI, SIPPOLA 550 ± 110
AD 1400

Charcoal from hearth, KM 13105:48
Subm. 1969 by V. Luho.

Hel-80 MAJALAMPI, ESPOO, FINLAND recent

Wood from a boat, bog find.
Subm. 1969 by V. Luho.

Hel-81 KIHNIÖ, FINLAND 660 ± 110
AD 1290

Wood from a sled, bog find.
Subm. 1969 by V. Luho.

Hel-83 RASI, ALAJÄRVI, FINLAND 2490 ± 150
540 BC

Charcoal from cultural layer, KM 11771:194
Subm. 1970 by V. Luho.

Hel-84 SKIERRIFÄLIS, UTSJOKI, FINLAND recent

Bark from birch.
Coll. and subm. 1969 by P. Kallio.

Hel-85 - 86 See SONKAJA SERIES Hel-73

Hel-87 PUSKA, KURIKKA, FINLAND 890 ± 120
AD 1060

Charcoal from cultural layer, KM 18134
Subm. 1970 by V. Luho.

Hel-88 PORKKA, KYMI, FINLAND 620 ± 120
AD 1330

Charcoal from cultural layer, 18116:202
Subm. 1970 by V. Luho.

Hel-89 BOLAGSVÄGEN, KAUNIAINEN, FINLAND 2570 ± 140
620 BC

Charcoal from hearth, KM 16287:13
Subm. 1970 by V. Luho.
Comment(C.F.Meinander): The find consists of ceramic belonging to the Battle Axe Culture (expected age 2000 BC) and a pot of Morby-ceramic (expected age 500 - 0 BC).

Hel-90 AHJO, KERAVA, FINLAND recent

Charcoal from a charred wooden construction below a cairn.
Coll. by P. Purhonen and subm. 1970 by V. Luho.

Hel-91 AHJO, KERAVA, FINLAND recent

Charcoal
Coll. by P. Purhonen and subm. 1970 by V. Luho.

Hel-92 - 94 See SYYSJÄRVI SERIES I Hel-71

Hel-95 - 96 See HAUKKASUO SERIES Hel-50

SUURI JOUTENLAMPI SERIES, ILOMANTSI, FINLAND

62°51'N, 31°25'E, 192.9 m a.s.l.
Coll. and subm. 1970 and 1971 by H. Hyvärinen.
(Hyvärinen 1971, 1972, 1973)

Hel-97A 11720 ± 310
9770 BC

Sandy/silty mud (gyttja), 104-109 cm depth.
Comment(HH): Pollenstratigraphic position of sample is base of Birch zone and expected age ca 10000 BP. The sediment is poor in organic matter and probable reason for the too high age is contamination by derived interglacial material or graphite (Donner and Jungner 1974).

Hel-97B 12960 ± 610
11010 BC

Humus extract, not pure, 104-109 cm depth.
Comment(HH): Sample (humic fraction) was dated as a check for Hel-97A (insoluble fraction), but as the humus extract was not pure, no conclusions can be drawn as to possible age difference between the two fractions.

Hel-98 10790 ± 260
8840 BC

Silty mud, 135-140 cm depth.
Comment(HH): Sample relates to Artemisia zone and is expected to be of Younger Dryas age. The date is broadly consistent with this, although some contamination by old, derived material may be suspected even in this case (cf. Hel-97).

Hel-99 9600 ± 260
7650 BC

Mud (dy), 92-97 cm depth.
Comment(HH): Date relates to base of Birch and is in accord with expectation.

Hel-210 9570 ± 270
7620 BC

Sandy/silty mud (gyttja), 105-110 cm depth.
Comment(HH): Date represents base of Birch zone and agrees, within margin of errors, with expected age and with Hel-99.

Hel-100 SÄKYLÄNHARJU, SÄKYLÄ, FINLAND recent

60°59'N, 22°39'E (676480, 42696)
Wood, black burned tree stump at 70 cm depth in fine sand, in a dune at Säkylänharju esker.
Coll. (digging) and subm. 1969 by G. Glückert.
(Glückert 1971)

Hel-101 See NÄLKÖÖNSUO SERIES Hel-58

Hel-102 VARRASSUO, HOLLOLA, FINLAND 9910 ± 280
7960 BC

60°59'N, 25°27'E (67655', 58092/24°), 149 m a.s.l.
Sandy gyttja, 413-430 cm depth, profile D.
Coll. 1969 with Reissinger corer and subm. 1970 by K. Tolonen.
Comment(KT): Upper boundary of zone III(Tolonen and Ruuhijärvi 1976).
Thickness of the sample in years about 400.

Hel-103 - 104 See NÄLKÖÖNSUO SERIES Hel-58

LAKE PÄIJÄNNE SERIES, FINLAND

The following dates on mud (gyttja) and clay-mud from small lakes provide dating of the upper limit of the Flandrian (Holocene) transgression of Lake Päijänne (Saarnisto 1971). The sites are situated in the SE-part of the lake complex in a zone between the present lake and the highest transgression limit.
Samples collected using a piston corer 1970 by M. Saarnisto.
Most samples are composites from equivalent stratigraphical levels in two or more replicate cores.

Hel-106 LAHNALAMPI, ASIKKALA 5890 ± 190
3940 BC

61°16'N, 25°44'E (6796.60, 430.30), 85.8 m a.s.l.

Mud, 225-232 cm depth.

Comment(MS): End of the Päijänne transgression, compare Hel-107, -109.

Hel-113 LAHNALAMPI 2 6250 ± 180
4300 BC

Clay-mud, 258-263 cm depth.

Comment(MS): Beginning of the Päijänne transgression.

Hel-107 SALMENLAMPI, SYSMÄ 6230 ± 180
4280 BC

61°25'N, 25°36'E (6812.68, 425.87), 86.3 m a.s.l.

Mud, 355-361 cm depth.

Comment(MS): End of the Päijänne transgression.

Hel-108 SALMENLAMPI 2 6500 ± 210
4550 BC

Clay-mud, 361-368 cm depth.

Comment(MS): Clay-mud near the end of the Päijänne transgression.

Hel-112 SALMENLAMPI 3 6440 ± 200
4490 BC

Clay-mud, 380-385 cm depth.

Comment(MS): Beginning of the Päijänne transgression.

Hel-109 SÄRKIJÄRVI, SYSMÄ 5780 ± 190
3830 BC

61°35'N, 25°00'E (6831.30, 429.86), 85.8 m a.s.l.

Mud, 323-328 cm depth.

Comment(MS): End of the Päijänne transgression.

Hel-110 SÄRKIJÄRVI 2 6360 ± 210
4410 BC

Clay-mud, 345-351 cm depth.

Comment(MS): Clay-mud near the end of the Päijänne transgression.

Hel-111 SÄRKIJÄRVI 3 6510 ± 200
4560 BC

Mud, 382-387 cm depth.

Comment(MS): Beginning of the Päijänne transgression.

Hel-137 SÄYNÄTLAMPI, HEINOLA 2390 ± 150
440 BC

61°11'N, 26°12'E (6787.44, 456.85), 79.2 m a.s.l.

Wood, 50-65 cm depth.

Comment(MS): Wood below delta-sand of Hepo-oja creek.

PUNASSUO SERIES, PERNIÖ, FINLAND

(6678.93, 446.18/24°)

Coll. with large Russian peatsampler and subm. 1970 by K. Tolonen.

(Tolonen 1977)

Hel-114 PUN 1 recent

Peat, 50-55 cm depth.

Comment(KT): Stratigraphically acceptable.

Hel-115 PUN 2 1020 ± 120
AD 930

Peat, 130-135 cm depth.

Comment(KT): Zone IX. Secale.+ Beginning of hollow stage which ends at 50 cm level.

Hel-116 PUN 3 1940 ± 130
AD 10

Peat, 150-157 cm depth.

Comment(KT): Zone IX. Stratigraphically consistent. Beginning of hollow stage.

Hel-117 - 118 See HAUKKASUO SERIES Hel-50

Hel-119 PETSIMJÄRVI, INARI, FINLAND 7990 ± 240
6040 BC

69°16'N, 27°51'E, 193 m a.s.l.

Sandy sludge, 290-300 cm depth.

Coll. and subm. by M. Seppälä.

Comment(MS): Sample taken from the bottom of Petsimjärvi peat bog.

(Seppälä 1971a, 1971b)

Hel-120 KIELLAJOKI, INARI, FINLAND 3920 ± 180
1970 BC

69°18'N, 26°48'E, 203 m a.s.l.

Sandy sludge, 175-185 cm depth.

Coll. and subm. 1970 by M. Seppälä.

Comment(MS): Sample taken from the bottom of Kiellajoki peat bog formed at a deflation lake between two dunes.+ Shows the beginning of peat formation in the deflation lake (Seppälä 1971a, 1971b).

Hel-121 SUTTISJOKI, INARI, FINLAND 7590 ± 220
5640 BC

69°20'N, 26°43'E

Sandy sludge, 235-245 cm depth.
Coll. and subm. by M. Seppälä.
Comment(MS): Sample taken from rimpi of the same palsa bog as sample Hel-33 (Seppälä 1971a, 1971b).

VOHTENKELLARINSUO, PAIMIO, FINLAND

60°25'N, 22°42'E (670163, 42813), 51 m a.s.l.
Coll. 1969 and subm. 1970 by G. Glückert.
(Glückert 1976, 1977)

Hel-123 — 1640 ± 130 AD 310
Ashlayer from forest fire in Sphagnum peat, 50 cm depth.

Hel-124 — 5220 ± 190 3270 BC
Remnants of wood in Phragmites peat, 160 cm depth.

Hel-125 — 3790 ± 170 1840 BC
Remnants of wood in peat, 120 cm depth.

Hel-126 — 2550 ± 150 600 BC
Sample taken from a stump, 80 cm depth.
Comment(GG): Zone boundary VIII/IX.

Hel-127 RAIDANLAHTI, KORPILAHTI — 5240 ± 190 3290 BC
Charcoal from hearth, KM 14130:51
Subm. 1970 by V. Luho.

Hel-128 MAJAKAARRE, PIHTIPUDAS, FINLAND — 1390 ± 130 AD 560
Charcoal from hearth of a hut, KM 16344:11
Subm. 1970 by V. Luho.

Hel-129 POHJOISNIEMI, PIHTIPUDAS, FINLAND — 350 ± 110 AD 1600
Charcoal from hearth, KM 16166:33
Coll. 1963 by P-L. Lehtosalo and subm. 1970 by V. Luho.
Comment(P-LL): Bone finds connect the dwellingplace to mesolithic time but also Bronze and Iron Age artifacts have been found indicating that the site has been used during different periods.

Hel-130 KYLÄHIISI, KALANTI, FINLAND 810 ± 160
AD 1140

Charcoal from base of hearth, KM 17795:643
Coll. 1969 by P-L. Lehtosalo and subm. 1970 by V. Luho.
Comment(P-LL): The artifacts found from the site point towards the Crusade period (AD 1050 - 1150).

Hel-131 LUISTARI, EURA, FINLAND 640 ± 120
AD 1310

Charcoal from grave, KM 18000:1233
Coll. 1969 by P-L. Lehtosalo and subm. 1970 by V. Luho.
Comment(P-LL): The sample was taken from a stone setting above a grave from the Merovingian period (AD 600 - 800).

HUONONAHONVUORI SERIES, KUHMOINEN, FINLAND

61°38'N, 25°19'E, 140.4 m a.s.l.
Coll. and subm. 1970 by E. Jauhiainen.
The dates are associated with the formation of an iron-humus podzol under a peat layer.
(Jauhiainen 1972b)

Hel-132A 2540 ± 140
590 BC

Carex peat from a depth of 50-55 cm.

Hel-132 B 2400 ± 140
450 BC

Humus fraction of sample Hel-132A.

Hel-133 1880 ± 130
AD 70

Sample from B_1 horizon of podzol, 105-115 cm depth.
Acid treatment only.

SÄYNÄJÄLAMPI SERIES, KUUSAMO, FINLAND

Comment(J. Donner): Samples were dated in order to compare recent birch wood with water plants and surface mud in lake Säynäjälampi, in which 3 earlier dates of the Holocene muds indicated that they had been influenced by the hard-water effect.
(Donner, Jungner and Vasari 1971)

Hel-134 $\Delta = 159 \pm 13$
$\delta^{13}C = -25.1‰$

Potamogeton plants.

Hel-135 $\Delta = -213 \pm 14$
$\delta^{13}C = -29.6‰$

Sample from surface of the bottom mud.

Hel-136 $\Delta = 754 \pm 19$
$\delta^{13}C = -27.8‰$

Sample consisting the five outermost tree rings of a birch growing at the lake.

Hel-137 See LAKE PÄIJÄNNE SERIES Hel-106

Hel-138 - 141 See AKSHUJÄRVI SERIES Hel-70

SYYSJÄRVI SERIES II, INARI, FINLAND

69°18'N, 27°10'E, 214.5 m a.s.l.

Samples coll. and subm. 1970 by M. Salmi.

Hel-142 13115/70 MS 480 ± 120
AD 1470

Deciduous nanolignidi peat, 55-60 cm depth.

Comment(MS): Sample is taken above permafrost and silt bottom from a small pounupalsa quite near Syysjärvi palsa. Pollen analysis indicates the upper Sub-Atlantic Betula period.

(Salmi 1972)

Hel-212 8/70 MS 1150 ± 160
AD 800

Deciduous peat with sand, pounupalsa, 35-40 cm depth.

Comment(MS): The sample is taken from the same pounupalsa as sample Hel-142, but from an other profile representing lowest peat of the formation. Pollen analysis indicates the upper (Sub-Atlantic) Betula period.

Hel-143 OULU, FINLAND 470 ± 110
AD 1480

Wood from sled, Oulun ahkio.

Subm. 1970 by V. Luho.

Hel-144 RUOHTTIR FELL, KEVO, FINNISH LAPLAND 890 ± 110
AD 1060

69°28'N, 26°27'E, 550 m a.s.l.

Peat, 17.5-18.0 cm depth.

Coll. and subm. 1970 by M. Seppälä.

Comment(MS): Sample taken from the bottom of a peat layer at the top of the fell. Compare Hel-299.
(Seppälä 1972)

Hel-145 ABO 2, ISOSUO, RUSKO, FINLAND 2020 ± 140
70 BC

Peat and mineral substance, 255-260 cm depth.
Coll. and subm. 1970 by M. Seppälä.
Comment(ed.): The sample gives a date for the beginning of paludification and should be a test for the shell gravel sample (Hel-74) as the samples are taken from sites situated at the same height a.s.l. and therefore should date the retreat of sea from the area.

HAFRATJÖRN SERIES, HÚNAVATNSSÝSLA, ICELAND

65°35'N, 20°08'W, ca 130 m a.s.l.
Two samples from lowermost (supposedly Lateglacial) part of a series from the overgrown Hafratjörn near Kagaðarhóll.
Coll. with piston sampler 1967 and subm. by Y. and A. Vasari.

Hel-146 HAFRATJÖRN 1 7940 ± 260
5990 BC

Fine gyttja from 663-672 cm below fen surface.
Comment(YV): The age Early Atlantic is considerably younger than originally estimated (Allerød, cf. Vasari 1972, 1973).
Inconsistent with later results (Hel-562 and Hel-563).

Hel-159 HAFRATJÖRN 2 7830 ± 360
5880 BC

Fine gyttja from 624-636 cm below fen surface.
Comment(YV): The age (Early Atlantic) is considerably younger than originally estimated (Preboreal, cf. Vasari 1972, 1973).
Inconsistent with later results (Hel-562 and Hel-563).

SAVUKOSKI SERIES, SOKLI, FINLAND

67°47'N, 29°24'E, 220 m a.s.l.
Coll. and subm. 1970 and 1972 by E. Ilvonen.
Comment(EI): According to the microflora the samples are of interglacial age.
(Ilvonen 1973)

Hel-147 900260 > 45000

Hel-348 N:o 04 46100 + 9000 − 4000

Peat, 780-785 cm depth.

Hel-349 N:o 05 > 45000

Peat, 875-880 cm depth.

Hel-148 See PILLISUO SERIES Hel-55

Hel-149 See KIEVARINSUO SERIES Hel-56

KONIJÄRVI SERIES, SAIRILA, MIKKELI, FINLAND

Samples are associated with the influence of man on the vegetation and the slash and burn cultivation in the area.
Coll. and subm. 1970 by R. Ruuhijärvi and R. Relander.

Hel-150 1410 ± 120
AD 540

Peat, 32-34 cm depth.
Expected age according to pollen analysis 200 - 500 BP.

Hel-151 1830 ± 120
AD 120

Peat, 35.5-37.5 cm depth.
Expected age according to pollen analysis 500 - 1000 BP.

PYHÄPOHJA SERIES, JUVA, FINLAND

See general comments for Konijärvi series above.
Coll. and subm. 1970 by R. Ruuhijärvi and R. Relander.

Hel-152 2810 ± 130
860 BC

Peat, 35-36 cm depth.
Expected age 500 - 1000 BP.

Hel-153 390 ± 100
AD 1560

Peat, 15-17 cm depth.
Expected age 100 - 300 BP.

Hel-154 STORMYRA, REINDALEN, VAN MIJENFJORDEN, SPITSBERGEN recent

77°54'N, 14°38'E, c. 15 m a.s.l.

A vast valley mire (several km^2), flark level, total peat depth 18 cm.
Peat, 6-12 cm depth.
Coll. 1969 by S. Eurola.
Comment(SE): The age is surprisingly young. However it may support some mire development theories in arctic conditions.

VAKOJÄRVI SERIES, VIHTI, FINLAND

60°20'N, 24°36'E, 82 m a.s.l.
Coll. and subm. 1971 by J. Donner.
Comment(JD): With the help of the 7 radicarbon dates from Vakojärvi the overall rate of deposition and the pollen influx were determined for Holocene lake muds.
(Donner 1972)

Hel-155 — 7680 ± 220 / 5730 BC
Detritus mud, 885-895 cm depth.

Hel-156 — 5550 ± 180 / 3600 BC
Detritus mud, 835-845 cm depth.

Hel-157 — 3570 ± 140 / 1620 BC
Detritus mud, 782.5-797.5 cm depth.

Hel-158 — 2410 ± 130 / 460 BC
Detritus mud, 732.5-747.5 cm depth.

Hel-197 — 6740 ± 240 / 4790 BC
Detritus mud, 860-870 cm depth.

Hel-198 — 4930 ± 150 / 2980 BC
Detritus mud, 807.5-822.5 cm depth.

Hel-199 — 3050 ± 130 / 1100 BC
Detritus mud, 757.5-772.5 cm depth.

Hel-159 See HAFRATJÖRN SERIES Hel-146

DRYMEN SERIES, STIRLINGSHIRE, SCOTLAND

56°06'N, 04°25'W, surface alt 220 m.

Three samples from various levels of a poor fen adjoining the Muir Park Reservoir.

Coll. 1969 with piston sampler and subm. by Y. Vasari.

(Vasari 1977)

Hel-160 — 12510 ± 310 / 10560 BC

Clay-gyttja from 715-723 cm below fen surface.

Comment(YV): Meant to date the I/II pollen zone boundary (= beginning of organic deposition), places it within the early Lateglacial Interstadial. Hard-water effect suspected.

Hel-161 — 12060 ± 320 / 10110 BC

Gyttja from 699-704 cm below fen surface.

Comment(YV): Presumed to date the II/III pollen zone boundary the result is about 1000 - 1300 years too old.

Hel-162 — 10010 ± 230 / 8060 BC

Clay-gyttja and gyttja from 662-678 cm below fen surface.

Comment(YV): Date agrees well with the supposed III/III-IV pollen zone boundary.

Hel-168 LEHTOJÄRVI, ROVANIEMI, FINLAND — 7740 ± 170 / 5790 BC

Wood, elk's head carving, bog find, KM 14189.

Subm. 1971 by A. Erä-Esko.

Ref. Erä-Esko 1958, Hyyppä 1958.

Comment: The specimen has been dated by pollen analysis to the Early Atlantic period and by stylistic evidence to the Mesolithic stone age. Thus the radiocarbon test agrees with the above results.

Hel-169 — recent

Wood from skiing pole, KM 6782

Subm. by V. Luho.

Hel-170 — 1440 ± 120 / AD 510

Wood from ski.

Subm. by V. Luho.

Hel-171 LAITILA, FINLAND 700 ± 100
AD 1250

Wood from ski, KM 13783
Subm. by V. Luho.

Hel-172 TYRVÄÄ, FINLAND 1290 ± 110
AD 660

Wood from ski, KM 7718
Subm. by V. Luho.

Hel-174 LOCH KINORD, ABERDEENSHIRE, SCOTLAND 11480 ± 440
9530 BC

57°05'N, 02°56'W, 175 m a.s.l.
Clay-gyttja/gyttja, 640-655 cm below the surface of the carr near the western end of the lake.
Coll. 1969 with piston sampler and subm. 1971 by Y. Vasari.
Comment(YV): Inconsistent with other dates from the same site (Hel-418 - Hel-421).
(Vasari 1977)

Hel-179 NUIJAMAA, FINLAND 410 ± 100
AD 1540

Wood from ski, KM 8671
Subm. 1971 by V. Luho.

Hel-180 MUOLAA, FINLAND 880 ± 80
AD 1070

Wood from ski, KM 7406
Subm. 1971 by V. Luho.

Hel-181 KERKONJOENSUU, RAUTALAMPI, FINLAND 610 ± 100
AD 1340

Wood from skiing pole, KM 10118
Subm. 1971 by V. Luho.

Hel-182 SVARTSÅ, FINLAND 170 ± 100
AD 1780

Wood from ship.
Subm. 1971 by V. Luho.

Hel-183 SVARTSÅ, FINLAND 240 ± 100
AD 1710

Wood from ship.
Subm. 1971 by V. Luho.

Hel-185 JOUTENLAMPI, KUHMO, FINLAND 8390 ± 290
6440 BC

64°05'N, 30°29'E, 238.8 m a.s.l.
Mud, 470-475 cm depth.
Coll. 1971 and subm. by H. Hyvärinen.
Comment(HH): Data relates to pollen zone transition Birch/Pine and agrees, within margins of errors with expected age.
(Hyvärinen 1972, 1973)

Hel-186 KOKEMÄKI, FINLAND recent

Wood from the wall of St. Henrik's sermon house.
Subm. 1971 by V. Luho.

Hel-187 KOKEMÄKI, FINLAND 300 ± 120
AD 1650

Wood from the door of St. Henrik's sermon house.
Subm. 1971 by V. Luho.

Hel-188 TORMUA, SUOMUSSALMI, FINLAND 4190 ± 140
2240 BC

Charcoal from stone setting, about 70 cm depth, about 201 m a.s.l., KM 18322
Coll. 1970 by M. Huurre and subm. 1971 by V. Luho.
Comment(MH): The site has yielded archaeological material from the combceramic era to Early Ironage. From the stone setting some pieces of asbestoceramics have been found.

Hel-189 ILMOILA, HAUHO, FINLAND 190 ± 90
AD 1760

Charcoal from cremation cemetery, KM 18256
Subm. 1971 by V. Luho.

Hel-190 ILMOILA, HAUHO, FINLAND recent

Charcoal from cremation cemetery, KM 18256
Subm. 1971 by V. Luho.

Hel-191 NEITILÄ, KEMIJÄRVI, FINLAND 6750 ± 170
4800 BC

Charcoal from hearth, KM 16145:2164
Subm. 1971 by V. Luho.
(Kehusmaa 1972, Siiriäinen 1974, 1978)

Hel-192 LIEKOLANKATU, VAMMALA, FINLAND 1820 ± 100
AD 130

Charcoal from a pit hearth, 70 cm depth, 60.5 m a.s.l.,
KM 18251
Coll. 1970 by A. Kehusmaa and subm. 1971 by V. Luho.
Comment(AK): The site has yielded archaeological material from younger Stone Age up to Iron Age. The sample dates a hearth place from the site.

Hel-193 LIEKOLANKATU, VAMMALA, FINLAND 2290 ± 110
340 BC

Charcoal from a pit hearth, 50 cm depth, 60.7 m a.s.l.,
KM 18251
Coll. 1970 by A. Kehusmaa and subm. by V. Luho.
Comment(AK): The sample is taken from a hearth. Above the hearth there was a grave dated on the basis of archaeological material to 400 - 600 AD.

VALKIAJÄRVI SERIES, RUOVESI, FINLAND

61°54'N, 23°53'E, 110 m a.s.l.
Coll. and subm. 1971 by J. Meriläinen.
(Tolonen and Ruuhijärvi 1976).

Hel-194 4040 ± 210
2090 BC

Mud, 125-140 cm depth.
Comment(JM): Rise of spruce pollen curve (P^+).

Hel-195 6320 ± 160
4370 BC

Mud, 175-190 cm depth.
Comment(JM): First tilia pollen (T^o).

Hel-196 7970 ± 180
6020 BC

Mud, 245-260 cm depth.
Comment(JM): Lowermost organic sediment.

Hel-197 - 199 See VAKOJÄRVI SERIES Hel-155

Hel-200 DEGERMOSSA, BRÄNDÖ, THE ÅLAND ISLANDS, FINLAND 990 ± 100
AD 960

60°25'N, 21°09'E, 14 m a.s.l.
Stump of pine, bogfind, about 50 cm depth.
Coll. and subm. 1971 by B. Ohlson.
For reference see Glückert (1976) p.43.

UNTULA SERIES, LAMMI KK, FINLAND

61°06'N, 25°00'E, 97.7 m a.s.l.

Peat samples subm. 1971 by R. Ruuhijärvi.

(Tolonen and Ruuhijärvi 1976)

Hel-201 UNTULA 1 — 980 ± 100 AD 970

20-22 cm depth

Comment(RR): Younger than expected. Caused obviously by peat cutting in historical time.

Hel-202 UNTULA 2 — 2370 ± 110 420 BC

73-77 cm depth

Comment(RR): A little above QM decline.

Hel-203 UNTULA 3 — 3850 ± 130 1900 BC

108-112 cm depth

Comment(RR): Picea^{+}, date is some 200 years younger than other dates for P^{+} from the Lammi district (Hel-283 and Hel-491).

Hel-204 UNTULA 4 — 5120 ± 170 3170 BC

192-196 cm depth

Comment(RR): A little above Tilia^{+}.

Hel-205 UNTULA 5 — 6630 ± 170 4680 BC

278-282 cm depth

Comment(RR): About Tilia^{o}.

Hel-206 UNTULA 6 — 7310 ± 270 5360 BC

333-336 cm depth

Comment(RR): Alnus^{--}, the date is some 500 years younger than other dates in S. Finland for A^{+}.

Hel-207 UNTULA 7 — 8640 ± 190 6690 BC

365-369 cm depth

Comment(RR): The deep rise of Pinus (boundary between Betula and Pinus assemblage zones), maybe some 200 years too young.

Hel-208 UNTULA 8 — 8580 ± 170 6630 BC

386-390 cm depth

Comment(RR): Younger than Hel-207 from the upper level in the same profile. Possible caused by Equisetum (deep-rooted plant).

SOMERO SERIES, SOMERO, FINLAND

Samples subm. 1971 by J. Donner.

General comment(JD): Samples from the early Holocene glacial clay at Somero were dated to confirm earlier conclusion, based on pollen and diatom studies that most of the microfossils and organic material in the clay have been re-deposited from interglacial Eemian sediments.

(Donner and Gardemeister 1971, Donner and Jungner 1973)

Hel-209 SOMERO 1 — 32600 + 1500 − 1240 / 30650 BC

Varved clay, 14.8-15.5 m depth.

Total substance dated.

Hel-213 SOMERO 2 — 30900 + 1400 − 1200 / 28950 BC

Varved clay, 20.8-23.0 m depth.

Insoluble fraction dated.

Hel-218 SOMERO 2 — 25900 + 600 − 550 / 23950 BC

Varved clay, 11.1-23.0 m depth.

Humus fraction from Hel-213.

Hel-210 See SUURI JOUTENLAMPI SERIES Hel-97A

Hel-212 See SYYSJÄRVI SERIES II Hel-142

Hel-213 See SOMERO SERIES Hel-209

Hel-214 SVARTSÅ, FINLAND — 360 ± 100 / AD 1590

Wood from ship found at Svartså.

Subm. 1971 by V. Luho.

Hel-218 See SOMERO SERIES Hel-209

Hel-219 PELTOVUOMA, NUNNANEN, FINLAND — 220 ± 120 / AD 1730

68°20'N, 24°15'E

Pieces of charcoal and organic remains from a podzol layer, 1.2 m depth.
Coll. and subm. 1971 by E. Jauhiainen.
(Jauhiainen 1972)

LUTTO SERIES, SODANKYLÄ, FINLAND

68°27'N, 28°23'E, 135 m a.s.l.
Coll. 1970 and subm. 1971 by M. Saarnisto.
(Saarnisto 1973)

Hel-220 — 7230 ± 220
5280 BC

Peat, 403–408 cm depth.
Comment(MS): Accumulation peat from the bottom of an unnamed pond in the Lutto river valley to the east of Suomunsuu representing Birch/Pine zone boundary in local pollen stratigraphy.

Hel-221 — 8160 ± 190
6210 BC

Mud, 420–425 cm depth.
Comment(MS): Lowest organic sediment (compact mud) from the same pond as Hel-220 representing Birch zone in local pollen stratigraphy.

GATUNG'ANG'A SERIES, NYERI DISTRICT, KENYA

0°24'48"S, 37°03'15"E
Coll. and subm. 1971 by A. Siiriäinen.
General comment(AS): Dates the transition from Early to Later Iron Age in the Eastern Highlands of Central Kenya.
(Siiriäinen 1971b, Soper 1974, Phillipson 1975)

Hel-222 B 1/2 NW — 810 ± 120
AD 1140

Pieces of charcoal from an occupation layer of an Iron Age site with implications of iron working.

Hel-223 C 7/2 a — 820 ± 100
AD 1130

Charcoal

Hel-224 B 1/3 — 850 ± 150
AD 1100

Charcoal

Hel-225 C 7/3 690 ± 100
AD 1260
Charcoal

Hel-226 B 1/4 600 ± 80
AD 1350
Charcoal

BAVARIA SERIES, W GERMANY

Samples coll. and subm. 1971 by G. Glückert.
Ref. Glückert 1973.

Hel-227 577, KIRCHHEIM BEI TITTMONING 34550 + 2500 - 1850
32600 BC
Remnants of hardened peat, 2 m depth, 376 m a.s.l.,
10 m above the river Salzach.

Hel-228 578, KIRCHHEIM BEI TITTMONING 23150 + 680 - 630
21200 BC
Remnants of hardened peat, 0.8 m depth, 376 m a.s.l.,
10 m above the river Salzach.

Hel-229 591, RAMSDORF BEI WIESMÜHL 6290 ± 160
4340 BC
Peat beneath calcareous sinter deposit, 5 m depth, 410 m a.s.l.

ATLIN SERIES, 4TH OF JULY CREEK VALLEY, ATLIN, BRITISH COLUMBIA, CANADA

59°52'N, 133°20'W
Coll. and subm. 1971 by M. Seppälä.
General comment(MS): Mineral core palsa. Dating for determining the development of sediments of the valley bottom. Ages in turned order.

Hel-230 ATLIN 1 7470 ± 180
5520 BC
Muddy silt, 1.2 m depth.

Hel-231 ATLIN 2 7990 ± 180
6040 BC
Muddy silt, 1.1 m depth.

HAKOJÄRVI SERIES, EVO, FINLAND

61°15'N, 25°12'E, 145.6 m a.s.l.
Samples coll. 1971 by J. Meriläinen using a large Russian peat sampler (1000 x 100 mm) and subm. 1972 by K. Tolonen.
Ref. Huttunen, Meriläinen and Tolonen (1978).

Hel-232 HAKO A7, profile C — 570 ± 130 AD 1380

Mud, 21-32 cm depth.

Comment(KT): Zone IX.

Hel-233 HAKO A6, profile C — 960 ± 130 AD 990

Mud, 73-84 cm depth.

Comment(KT): Zone IX.

Hel-234 HAKO A5, profile C — 1200 ± 140 AD 750

Mud, 155-166 cm depth.

Comment(KT): Zone VIII. Some 1500 years too young.

Hel-235 HAKO A4, profile C — 730 ± 160 AD 1220

Mud, 246-257 cm depth.

Comment(KT): Zone AT. Discarded, some 4500 years too young.

Hel-236 HAKO A3, profile C — 5030 ± 180 3080 BC

Mud, 287-298 cm depth.

Comment(KT): From period between Tilia^{+} and Picea^{o}.

Hel-237 HAKO A2, profile C — 4420 ± 200 2470 BC

Mud, 358-369 cm depth.

Comment(KT): Before Tilia^{+}. Stratigraphically some 1500 years too young.

Hel-238 HAKO A1, profile C — 4620 ± 220 2670 BC

Mud, 458-476 cm depth.

Comment(KT): Discarded, some 2500 years too young. Comp. Hel-324.

Hel-283 HAKO B1, profile C — 4190 ± 140 2240 BC

Mud, 175-185 cm depth.

Comment(KT): Picea^{+}. Stratigraphically accetable. Comp. Hel-301.

Hel-284 HAKO B3, profile C — 5900 ± 150 3950 BC

Mud, 325-340 cm depth.

Comment(KT): Tilia^{o}. Stratigraphically consistent.

Hel-301 HAKO B1, profile C — 4540 ± 140 2590 BC

Humus fraction of mud, 175-185 cm depth.

Comment(KT): Picea^{+}. Stratigraphically accetable. Comp. Hel-283.

Hel-302 HAKO B3, profile C — 5980 ± 160 / 4030 BC

Humus fraction of mud (Hel-284), 325-340 cm depth.

Comment(KT): Tilia. Stratigraphically consistent.

Hel-324 HAKO B4, profile C — 7250 ± 220 / 5300 BC

Mud, 475-490 cm depth.

Comment(KT): Stratigraphically consistent. Comp. Hel-333.

Hel-325 HAKO B, profile C (additional sample) — 3620 ± 240 / 1670 BC

Mud, 144-155 cm depth.

Comment(KT): From zone VIII. Comp. Hel-334.

Hel-333 HAKO B4, profile C — 6620 ± 230 / 4670 BC

Humus fraction of mud (Hel-324), 475-490 cm depth.

Hel-334 HAKO B, profile C (additional sample) — 3540 ± 180 / 1590 BC

Humus fraction of mud (Hel-325), 144-155 cm depth.

PIENI SALMILAMPI SERIES, KUHMO, FINLAND

64°05'N, 30°30'E

Coll. and subm. 1971 by H. Hyvärinen.

General comment(HH): All three dates are younger than expected and probably contamined by young carbon, reason unknown.

Hel-239 SAL 1 — 8160 ± 220 / 6210 BC

Mud, 612.5-617.5 cm depth.

Comment(HH): Sample relates to pollen zone transition Birch/Pine.

Hel-240 SAL 2 — 7980 ± 180 / 6030 BC

Mud, 627.5-632.5 cm depth.

Comment(HH): Sample relates to Birch zone.

Hel-241 SAL 3 — 7370 ± 170 / 5420 BC

Mud, 600-605 cm depth.

Comment(HH): Sample relates to Pine below rise of alder.

Hel-242 VARISLAMPI, KUHMO, FINLAND 7240 ± 170
5290 BC

64°09'N, 30°27'E

Mud, 317.5-325.5 cm depth.

Coll. and subm. 1971 by H. Hyvärinen.

Comment(HH): Sample relates to pollen zone transition Birch/Pine and is younger than expected by ca 1000 years. Contamination by young carbon suspected.

RENKOMÄKI SERIES, LAHTI, FINLAND

Samples coll. 1971 by M. Schauman and subm. 1972 by V. Luho.

Hel-243 recent

Charcoal from a pit-hearth, KM 18501:2037

Hel-244 recent

Charcoal from a pit-hearth, KM 18501:2038

Hel-245 recent

Charcoal from a pit-hearth, KM 18501:2042

Hel-246 recent

Charcoal from a pit-hearth, KM 18501:2043

Hel-247 MYLLYNUMMI, KARJALA, FINLAND 3220 ± 120
1270 BC

Charcoal from hearth, KM 13773:9

Subm. 1972 by V. Luho.

Comment(CF Meinander): The site has yielded style I:1 combceramics. Expected age 3800 BC.

Hel-248 NÄRRÄ, KUIVANIEMI, FINLAND 1720 ± 110
AD 230

Charcoal from hearth, KM 14535:408

Subm. 1972 by V. Luho.

Hel-249 MYNÄMÄKI, PYHEENSILTA, FINLAND 3320 ± 210
1370 BC

Charcoal from hearth, KM 15328:712

Subm. 1972 by V. Luho.

Comment: The site has yielded archaeological material of the Pyheensilta

stage dated by shore displacement to the latter half of the 3rd mill. BC. (Meinander 1939)

NEITILÄ SERIES, KEMIJÄRVI, FINLAND

Samples subm. 1972 by V. Luho.
Comment(A Siiriäinen): The samples come from a stratified prehistoric occupation site and are in accordance with the archaeological evidence showing preceramic (Mesolithic) settlement of the site. See also Hel-191. (Kehusmaa 1972, Siiriäinen 1978)

Hel-250 — 7310 ± 180 / 5360 BC
Charcoal from hearth, KM 16145:1917

Hel-251 — 1320 ± 100 / AD 630
Charcoal from a wooden construction of unknown purpose.

Hel-252 YLITALO, PAATTINEN, FINLAND — 2750 ± 190 / 800 BC
Charcoal from hearth, KM 16889:263
Coll. 1965 by A. Siiriäinen and subm. 1972 by V. Luho.
Comment(AS): The site has yielded archaeological material from the Early Combed Pottery period (c. 4000 - 3800 BC) and consequently the dating refers to a secondary occupation of the site.

KATINHÄNNÄNSUO SERIES, VIHTI, FINLAND

60°23'N, 24°28'E (6697.38, 526.12), 58.4 m a.s.l.
Sphagnum peat samples.
Coll. and subm. 1972 by I. Vuorela.
(Vuorela 1972, 1975)

Hel-253 — 1650 ± 140 / AD 300
176-184 cm depth
Comment(IV): The middle stage of a longer cultural phase indicated by a strong Picea decline and several culture indicators such as Cerealia, Rumex acetosella and Chenopodiaceae.

Hel-352 — 1140 ± 100 / AD 810
60-70 cm depth

Comment(IV): Below subzone boundary IXa/IXb, where cultural indicators arise simultaneously with the Picea decline and the rise in Pinus curve.

Hel-353 1940 ± 110
AD 10

135-145 cm depth

Comment(IV): The end of a clear cultural phase (see Hel-253). According to the disharmony of these ages only Hel-353 has later been used when compared with archaeological evidence.

Hel-354 3420 ± 150
1470 BC

300-310 cm depth

Comment(IV): The rise of Picea curve. The tail of Picea being long and irregular the primal rise in Picea could possibly be seen earlier, at 370 cm depth.

Hel-254 TORNIO, FINLAND 34300 $^{+\ 2000}_{-\ 1450}$

Antler of reindeer found 1967 at a depth greater than 3 m in a gravel pit.
Subm. 1972 by L. Siivonen.
For ref. see Siivonen (1972a, 1972b, 1974).

PAPPILANLAMPI SERIES, PIELISJÄRVI, FINLAND

63°18'N, 30°55'E, 200 m a.s.l.
Coll. 1971 using a Livingstone sampler (1800 x 70 mm) by K. Tolonen and J. Vuorinen.
Ref. Vuorinen and Tolonen (1975), Tolonen and Ruuhijärvi (1976).

Hel-255 PAP 11 1040 ± 170
AD 910

Coarse detritus gyttja, 38-43 cm depth.
Comment(KT): Profile A. Pinus-Picea zone. Stratigraphically consistent.

Hel-256 PAP 10 2780 ± 180
830 BC

Coarse detritus gyttja, 87-92 cm depth.
Comment(KT): Profile A. Pinus-Picea zone. Stratigraphically consistent.

Hel-257 PAP 9 3510 ± 210
1560 BC

Coarse detritus gyttja, 140-145 cm depth.
Comment(KT): Profile A. Pinus-Picea zone. Stratigraphically consistent.

Hel-258 PAP 8 4440 ± 160
2490 BC

Coarse detritus gyttja, 205-208 cm depth.
Comment(KT): Profile A. Pinus-Picea zone. Stratigraphically consistent.

Hel-259 PAP 7 5290 ± 210
3340 BC

Coarse detritus gyttja, 228-233 cm depth.
Comment(KT): Profile A. Zone Pinus-Betula / zone Pinus-Picea boundary. Stratigraphically consistent.

Hel-260 PAP 6 5310 ± 230
3360 BC

Coarse detritus gyttja, 248-253 cm depth.
Comment(KT): Profile A. Stratigraphically consistent. Little above the level of the generalization of spruce (Picea abies).

Hel-261 PAP 5 6290 ± 220
4340 BC

Coarse detritus gyttja, 289-294 cm depth.
Comment(KT): Profile A. Stratigraphically consistent. Early Pinus-Betula zone.

Hel-262 PAP 4 7230 ± 260
5280 BC

Coarse detritus gyttja, 332-337 cm depth.
Comment(KT): Profile A. Alnus^{+} in Pinus zone, obviously some 800 years too young.

Hel-263 PAP 3 8410 ± 190
6460 BC

Coarse detritus mud, 369-380 cm depth.
Comment(KT): Profile A. Close to zone Betula / zone Pinus boundary. Possibly some 800 years too young.

Hel-264 PAP 2 8570 ± 340
6620 BC

Coarse detritus gyttja, 390-395 cm depth.
Comment(KT): Profile A. Betula zone. In the light of all radiocarbon datings from the basin (see references in Vuorinen and Tolonen 1975) it is impossible to judge if the age obtained is correct.

Hel-265 PAP 1 5980 ± 250
4030 BC

Fine detritus gyttja/clay gyttja, 410-420 cm depth.
Comment(KT): Date discarded. Stratigraphically some 3500 years too young.

Hel-323 PAP 1a 8590 ± 320
6640 BC

Coarse-fine detritus gyttja, 400-407 cm depth.
Comment(KT): As Hel-264.

WATER SAMPLE SERIES, FINLAND

General comment: Radiocarbon determinations of salt water drawn from some deep wells drilled into the bedrock confirm the earlier suggestion that this ground water with a high cloride content is relic water from the time in the development of the Baltic when the coastal areas of Finland were submerged. An exact date cannot be given for the salt water because it has later been mixed with younger ground water.
(Donner and Jungner 1975)

Hel-266 AURA 1, AURA KK, FINLAND $\delta^{14}C = -393 \pm 15‰$
60°38'30"N, 22°35'30"E, 40 m a.s.l.
Groundwater from 136 m depth.

Hel-288 AURA 2, AURA KK, FINLAND $\delta^{14}C = -194 \pm 16‰$
Groundwater from 43 m depth.

Hel-281 POHJANMAA 1, RAUTIO, FINLAND $\delta^{14}C = -315 \pm 10‰$
64°05'N, 24°12'E, 55 m a.s.l.
Groundwater from 113 m depth.

Hel-282 POHJANMAA 2, ALAVIESKA, FINLAND $\delta^{14}C = -161 \pm 16‰$
64°11'N, 24°12'E, 40 m a.s.l.
Groundwater from 101 m depth.

Hel-340 PORVOO 1, FINLAND $\delta^{14}C = -44 \pm 16‰$
Water used by the Porvoo waterworks.

Hel-358 PORVOO 2, FINLAND $\delta^{14}C = +44 \pm 14‰$
Water from the surface of the Porvoo river.

CALCITE SAMPLE SERIES, KORSNÄS, FINLAND

Calcite samples collected from a cave found during excavation of the Korsnäs lead-lanthanide mine. The cave situated 190 m below the earth surface is part of a narrow vertical fracture zone.

Coll. and subm. 1972 by P. Rehtijärvi.

Hel-267 C 1 > 35000 BP
A big scalenodron.

Hel-268 C 2 > 45000 BP
Outer surface of a double-crystal.

Hel-272 C 3 > 45000 BP

Hel-291 C 4/1 > 45000 BP
Outermost part of C 4.

Hel-292 C 4/2 > 45000 BP
Middle part of C 4.

Hel-293 C 4/3 > 45000 BP
Innermost part of C 4.

Hel-269 ANTREA, KORPILAHTI 9230 ± 210
7280 BC

Bark from float, bog find, KM 6688
Coll. 1913 by S. Pälsi and subm. 1972 by V. Luho.
Comment(A Siiriäinen): The site has been dated previously by pollen analysis to the beginning of the Boreal period and by archaeological evidence to the Mesolithic period. Thus all the dating results agree well with each others. (Pälsi 1922, Siiriäinen 1974)

SOTANIEMI SERIES, KEMIJÄRVI, FINLAND

Charcoal samples subm. by V. Luho.

Hel-270 recent
KM 15042:332

Hel-271 200 ± 100
AD 1750
KM 15042:334

HAVERI SERIES, KEMIJÄRVI, FINLAND

Hel-273 6050 ± 170
4100 BC
KM 15191:1066

Hel-274 6070 ± 170
KM 15191:1067 4120 BC

Hel-275 6760 ± 240
KM 15191:1068 4810 BC

VAREVUOMA SERIES, ALATORNIO, FINLAND

66°16'N, 24°32'E, 116.0 m a.s.l.
Coll. and subm. by M. Eronen.
(Eronen 1974)

Hel-276 6640 ± 260
4690 BC

Peat, 420-426 cm depth.
Comment(ME): Peat formed after isolation of the bog basin from the Baltic Sea.

Hel-487 8400 ± 190
6450 BC

Silt/gyttja, 430-437 cm depth.
Comment(ME): Isolation of the basin from the ancient Baltic.

JATULANSAARI SERIES, KEMIJÄRVI, FINLAND

Coll. 1962 by A. Siiriäinen and subm. by V. Luho.
General comment(AS): According to archaeological evidence the site has been inhabited during the Early Iron Age which is in agreement with the radiocarbon datings.
(Siiriäinen 1964, 1978)

Hel-277 1610 ± 150
AD 340

Charcoal from hearth on an Early Metal Age dwelling site, KM 15492:742

Hel-278 1800 ± 120
AD 150

Charcoal from a cooking pit, KM 15492:743

Hel-279 2220 ± 110
270 BC

Charcoal from a cooking pit, KM 15492:745

Hel-280 OROMAANNOKKA, LAITILA, FINLAND 210 ± 90
AD 1740

Subm. by V. Luho.
Charcoal from cultural layer, KM 16258:6
Comment(CF Meinander): Site with ceramics of the Jäkärlä-style. Expected age 3500 BC.

Hel-281 - 282 See WATER SAMPLE SERIES Hel-266

Hel-283 - 284 See HAKOJÄRVI SERIES Hel-232

Hel-285 LEVÄJÄNKKÄ, ALATORNIO, FINLAND 6000 ± 130
4050 BC

66°11'N, 24°13'E, 94.5 m a.s.l.
Gyttja/peat, 312-322 cm depth.
Coll. and subm. 1972 by M. Eronen.
Comment(ME): Peat formed after isolation of the bog basin from the Baltic Sea. (Eronen 1974)

LEILÄNLAMMI SERIES, KISKO, FINLAND

60°12'45"N, 23°38'E, 42 m a.s.l.
Coll. and subm. 1972 by M. Eronen.
For ref. see Eronen 1974.

Hel-286 8740 ± 280
6790 BC

Gyttja-clay, 500-512 cm depth.
Comment(ME): The isolation point in the stratigraphy. The lake has isolated from the Baltic before the beginning of the Litorina Sea. The rise of Alnus pollen curve. The age is believed to be a little too old.

Hel-287 6620 ± 170
4670 BC

Clay-gyttja, 400-412 cm depth.
Comment(ME): Just beneath of the beginning of Tilia curve in pollen stratigraphy. Topmost part of the clay-gyttja layer in lithostratigraphy.

Hel-395 7780 ± 230
5830 BC

Clay-gyttja, 485-497 cm depth.
Comment(ME): Just above the isolation point in the stratigraphy. Just above the rise of Alnus curve in pollen stratigraphy.

Hel-288 See WATER SAMPLE SERIES Hel-266

ISLA CLARENCE SERIES, TIERRA DEL FUEGO

71°10'W, 54°30'S

Samples coll. and subm. by V. Auer.

For ref. see Auer 1974 p.8-11.

Hel-290 TEPHRA I — 8820 ± 290 / 6870 BC

Peat, samples 1033 - 1034.

Hel-316 TEPHRA II — 4840 ± 300 / 2890 BC

Peat, samples 1014 - 1017.

Hel-322 TEPHRA III — 2980 ± 250 / 1030 BC

Peat, samples 1006 - 1008.

Hel-291 - 293 See CALCITE SAMPLE SERIES Hel-267

PIESJÄRVI SERIES, UTSJOKI, FINLAND

69°26'N, 26°08'E

Coll. and subm. 1972 by M. Seppälä.

The samples belong to the palsa bog serie the other samples of which are Hel-33 and Hel-686 - 694.

Hel-294 PIES 1 — 7550 ± 250 / 5600 BC

Silt-mud, 260-270 cm depth.

Hel-295 PIES 2 — 8250 ± 190 / 6300 BC

Silt with remnants of plants, 100 cm depth.

Hel-296 PIES 3 — 6040 ± 230 / 4090 BC

Peat, 70 cm depth.

Hel-297 PIES 4 — 2250 ± 190 / 300 BC

Wood, 70 cm depth.

Hel-298 II-1, IIJÄRVI, INARI, FINLAND 3450 ± 130
1500 BC

Charcoal in sand, 39-40 cm depth.

Coll. and subm. 1972 by M. Seppälä.

Comment(MS): Deflation serie connected with forest fires. Comp. Hel-31.

Hel-299 KOD-1, KODDIGVAARA, UTSJOKI, FINLAND 1300 ± 160
AD 650

69°37'N, 26°36'E

Peat, 20 cm depth.

Comment(MS): Top peat serie. Comp. Hel-144.

Hel-301 - 302 See HAKOJÄRVI SERIES Hel-232

Hel-303 HAAPANIEMI, IISALMI, FINLAND 2140 ± 140
190 BC

Charcoal from hearth, KM 18901

Subm. by T. Edgren.

Hel-304 KAPPELINPELTO, JUVA, FINLAND recent

Charcoal from carbonized wooden coffin.

Coll. 1972 by M. Huurre.

Comment(MH): According to tradition there have been a church and a burial place in the area. From the grave only small remains of bone and enamel of teeth were found but no artifacts.

SIRNIHTA SERIES, KESÄLAHTI

Samples of charcoal from hearths, KM 18910

Subm. by T. Edgren.

Hel-305 SAMPLE 1 750 ± 120
AD 1200

Hel-306 SAMPLE 2 820 ± 100
AD 1130

Hel-307 SAMPLE 3 1560 ± 110
AD 390

Hel-308 SAMPLE 4 540 ± 100
AD 1410

Hel-309 SAMPLE 5 2030 ± 120
80 BC

Hel-310 KVARNBACKEN, LILJENDAL, FINLAND 4950 ± 130
3000 BC

Charcoal from hearth.
Subm. by T. Edgren.

Hel-311 HIETALAHTI, RANTASALMI, FINLAND 320 ± 120
AD 1630

Wood from sled, KM KTE 10228
Subm. by T. Edgren.

ROKUA SERIES, FINLAND

Samples coll. and subm. 1972 by T. Aartolahti.
Ref. Aartolahti 1973.

Hel-312 1 PIIRANNIEMI, ROKUANJÄRVI 2660 ± 120
710 BC

64°34'N, 26°32'E, 128 m a.s.l.
Peat from bottom of peat bog, 1.5 m depth.
Comment(TA): There is a dune in the lake Rokuanjärvi formed before the rise of water. The rise of water began at the beginning of the Atlantic period and continued still 2600 ± 120 BP. On the basis of terrestrial plant remnants it was possible to estimate, that the water level rose about 3 m.

Hel-313 2B ROKUA, railway 5340 ± 210
3390 BC

64°32'N, 26°43'E, 130 m a.s.l.
Mud from mud layer beneath Sphagnum peat, 0.6 m depth.
Comment(TA): The last small dunemounds formed on the beach ridges at the beginning of the Atlantic period (estimated). After then only beach ridges were formed. Paludification between the lowermost dune and the uppermost beach ridge began 5340 ± 210 BP.

Hel-314 3A ROKUA, deflation basin 5920 ± 150
3970 BC

64°32'N, 26°43'E, 133 m a.s.l.
Peat from bottom of peat layer, 0.4 m depth.
Comment(TA): The dune complex of Rokuanvaara was formed during Boreal period. Aeolian processes stopped and the rise of ground water table began at the beginning of Atlantic period (estimated). The dating indicates, that the paludification of deflation basin on the Rokuanvaara itself began 5920 ± 150 BP.

Hel-315 3B ROKUA, deflation basin 3950 ± 230
2000 BC

Organic remnants in sand 6-10 cm under peat layer of sample 3A.

Comment(TA): Age is too low. The age should be higher than that of the sample 3A. Possibly the roots of trees make the age too low.

Hel-316 See ISLA CLARENCE SERIES Hel-290

KANGERJOKI SERIES, KUUSAMO, FINLAND

Samples coll. and subm. 1972 by S. Hicks.
For ref. see Hicks 1975, 1976.

Hel-317 KANGERJOKI A 240 ± 70
AD 1710

Peat, 13-15 cm depth.

Comment(SH): The peat above this dated horizon contains small but significant amounts of pollen of cultural indicators. Since settlement of the area on a permanent basis began in in 1676 - 7 and was well established by 1760. The date of 1710 AD is in full agreement with the historical information.

Hel-318 KANGERJOKI B 4250 ± 130
2300 BC

Peat, 40-42 cm depth.

Comment(SH): Date used primarily in calculating the rate of peat accumulation. If a smooth curve of peat growth is predicted then this date is a little older than expected. However the pollen evidence suggests a change to drier conditions at just this level (decreasing Cyperaceae, increasing Ericaceae) which would be in keeping with a slowing down of peat accumulation. The peat stratigraphy has no obvious change but nevertheless, the dark amorphous nature of the peat is consistent with slow growth. The date lies precisely on the line extented upwards through Hel-319 and Hel-321. (See comments on Hel-321.)

Hel-319 KANGERJOKI C 6510 ± 160
4560 BC

Peat, 70-72 cm depth.

Comment(SH): Date used primarily in calculating the rate of peat accumulation.

Hel-320 KANGERJOKI D 8240 ± 190
6290 BC

Peat, 104-106 cm depth.

Comment(SH): This date from the base of the peat section marks the earliest mire vegetation on the site which on pollen evidence would seem to be from the time not long after the disappearance of the ice from this site. Many authors would held that this is too young but the remaining data from this site gives no reason to suggest this, and if the date is compared with similar horizons from other sites in the area (adjusting these for the hard water effect) there is no great discrepancy. (See Hicks 1975.) It is true, however, that if the line through Hel-318, Hel-321 and Hel-319 is extended downwards an older date would be expected, but the rate of peat accumulation need not be so regular (cf. upper part of same profile).

Hel-321 KANGERJOKI "wood" 4980 ± 140
3030 BC

Wood, 49-52 cm depth.

Comment(SH): The wood, a section of a trunk of Pinus was lying almost horizontally in the peat and taken as representing pine woodland which covered the bog surface (wood at this level is abundant). Its date falls on a straight line between those of the two peat samples from above and below it (Hel-319 and Hel-318) suggesting a uniform rate of deposition over the period and confirming the contemporaneity of the wood itself. This date also marks the rise in spruce - but see comment for Hel-633.

Hel-518 KANGERJOKI E 970 ± 100
AD 980

Peat, 18-23 cm depth.

Comment(SH): This date together with Hel-519 was taken to check on the unexpectedly slow rate of peat accumulation between 15 cm 40 cm depth. Both dates are almost exactly as expected. (See position between Hel-318 and Hel-317.)

Hel-519 KANGERJOKI F 2680 ± 120
730 BC

Peat, 31-36 cm depth.

Comment(SH): See comment for Hel-518.

Hel-322 See ISLA CLARENCE SERIES Hel-290

Hel-323 See PAPPILANLAMPI SERIES Hel-255

Hel-324 - 325 See HAKOJÄRVI SERIES Hel-232

DISKO BUGT SERIES, WEST GREENLAND

Samples coll. and subm. 1972 by J. Donner.
General comment(JD): Shell dates from the marine Holocene deposits in the Disko Bugt area, West Greenland, were used to date the land / sea level changes and deglaciation. Samples of different shell species from some deposits gave different ages because these deposits contain mixed death assemblages.

For ref. see Donner and Jungner 1975, Weidick 1976.

Hel-326 AKUGDLÎT — 900 ± 90 AD 1050
Peat, 30.0-25.5 cm depth, GGU 148424

Hel-327 AUMAT — 980 ± 100 AD 970
Peat, 20-25 cm depth, GGU 148403

Hel-328 ORPIGSÔQ — 5930 ± 130 3980 BC
Chlamys islandica, GGU 148422 — $\delta^{13}C$ = + 2.7‰

Hel-329 LERSLETTEN — 7880 ± 150 5930 BC
Mya truncata and Macoma calcarea, GGU 148420 — $\delta^{13}C$ = - 2.6‰

Hel-330 ORPIGSÔQ — 5040 ± 140 3090 BC
Zirphaea crispata, GGU 148423 — $\delta^{13}C$ = + 0.6‰

Hel-341 NIAQORNAQ — 8330 ± 200 6380 BC
Hiatella arctica, GGU 148405

Hel-342 N SHORE OF ISLAND OF KÁNALA — 6800 ± 165 4850 BC
Mya truncata, GGU 148407

Hel-343 NIVÂP SUVDLUA — 5340 ± 145 3390 BC
Mya truncata, GGU 148409

Hel-344 NIVÂP SUVDLUA — 6300 ± 160 4350 BC
Chlamys islandica, GGU 148410

Hel-345 NÛGÂRSSUK IN NIVÂP SUVDLUA	8550 ± 190 6600 BC
Hiatella arctica, GGU 148413	$\delta^{13}C$ = + 1.6‰
Hel-346 QEQERTAMIUT	7160 ± 170 5210 BC
Balanus spp., GGU 148415	$\delta^{13}C$ = + 3.6‰
Hel-347 QEQERTAVÂQIKASIK	7010 ± 170 5060 BC
Mya truncata, GGU 148416	
Hel-359 UNARRAT KANGERDLUA	4070 ± 130 2120 BC
Balanus spp., GGU 148401	$\delta^{13}C$ = + 0.6‰
Hel-360 NIAQORNAQ	6110 ± 140 4160 BC
Balanus spp., GGU 148402	$\delta^{13}C$ = + 3.4‰
Hel-361 NIAQORNAQ	5440 ± 130 3490 BC
Balanus spp., GGU 148404	$\delta^{13}C$ = + 2.5‰
Hel-362 N SHORE OF ISLAND OF KÁNALA	8970 ± 170 7020 BC
Hiatella arctica, GGU 148406	$\delta^{13}C$ = + 3.0‰
Hel-363 KUKASIUP QÁQÁ	7150 ± 210 5200 BC
Balanus spp., GGU 148408	
Hel-364 NÛGÂRSSUK IN NIVÂP SUVDLUA	6220 ± 160 4270 BC
Balanus spp., GGU 148414	
Hel-365 NÛGÂRSSUK IN NIVÂP SUVDLUA	5330 ± 210 3380 BC
Balanus spp., GGU 148412	
Hel-366 QEQERTASUGSSUK	6790 ± 160 4840 BC
Mytilus edulis, GGU 148417	$\delta^{13}C$ = - 0.7‰
Hel-367 QEQERTASUGSSUK	6040 ± 150 4090 BC
Mytilus edulis, GGU 148418	
Hel-368 LERSLETTEN	7880 ± 250 5930 BC
Mya truncata and Macoma calcarea, GGU 148419	

Hel-369 ORPIGSÔQ — 7210 ± 170 / 5260 BC

Mya truncata, GGU 148421

Hel-370 SÃTUT — 6680 ± 160 / 4730 BC

Mya truncata, GGU 148425

Hel-371 AKUGDLÎT — 6690 ± 160 / 4740 BC

Balanus spp., GGU 148426

Hel-436 NÛGÂRSSUK IN NIVÂP SUVDLUA — 6100 ± 160 / 4150 BC

Balanus spp., GGU 148413

Hel-437 NÛGÂRSSUK IN NIVÂP SUVDLUA — 8630 ± 200 / 6680 BC

Hiatella arctica, GGU 148414

Hel-438 QEQERTASUGSSUK — 6460 ± 210 / 4510 BC

Hiatella arctica, GGU 148417

Hel-454 AKUGDLÎT — 6560 ± 210 / 4610 BC

Hiatella arctica, GGU 148426(b)

Hel-455 NIAQORNAQ — 7800 ± 260 / 5850 BC

Mya truncata, GGU 148405(b)

JUIKENTTÄ SERIES, SODANKYLÄ, FINLAND

Samples of organic remains from inside of asbestos pottery.
Subm. by T. Edgren.

Hel-331 KM KT 5577:142 — 2720 ± 145 / 770 BC

Compare St-2723 (2570 ± 100 BP).

Hel-332 KM KT 5577:150 — 2570 ± 130 / 620 BC

Compare St-2739 (2060 ± 105 BP).

Hel-333 - 334 See HAKOJÄRVI SERIES Hel-232

LOCH KINORD SERIES I, ABERDEENSHIRE, SCOTLAND

57°05'N, 02°56'W, surface alt 175 m

Samples from various levels of a monolith dug from the carr on the western shore of the lake.

Coll. 1969 and subm. 1972 by Y. Vasari.

Hel-335 LK 1 — 1200 ± 100 AD 750

Wood peat, 58-60 cm depth.

Comment(YV): Vegetation (still) almost undisturbed by man.

Hel-336 LK 2 — 970 ± 100 AD 980

Wood peat, 38.5-43.5 cm depth.

Comment(YV): Beginning of clear human influence.

Hel-337 LK 3 — 1450 ± 130 AD 500

Boundary between wood peat and transgressive coarse gyttja, 30-33 cm depth.

Comment(YV): Inconsistent with other dates from the site, probably due to disturbances in sedimentation caused by transgression.

Hel-338 LK 4b — 750 ± 130 AD 1200

Gyttja, 26-28 cm depth.

Comment(YV): Strong human influence.

Hel-339 LK 5 — recent

Boundary gyttja/peat, 12-15 cm depth.

Comment(YV): Strong human influence, recent age may be due to contamination by recent roots.

Hel-340 See WATER SAMPLE SERIES Hel-266

Hel-341 - 347 See DISKO BUGT SERIES Hel-326

Hel-348 - 349 See SAVUKOSKI SERIES Hel-147

GALLTRÄSK SERIES, KAUNIAINEN, FINLAND

60°13'N, 22°44'E, 31 m a.s.l.

Samples coll. 1972 by P. Alhonen and M. Eronen. Subm. by M. Eronen.

Ref. Eronen (1974).

Hel-350 GALLTRÄSK 1 6180 ± 230
4230 BC

Gyttja, 135-145 cm depth.
Comment(ME): Isolation of the basin from the Litorina Sea.

Hel-351 GALLTRÄSK 2 7410 ± 250
5460 BC

Clay-gyttja/gyttja, 175-185 cm depth.
Comment(ME): Clypeus-limit in diatom stratigraphy. Beginning of Tilia curve in pollen stratigraphy.

Hel-352 - 354 See KATINHÄNNÄNSUO SERIES Hel-253

LOIMANSUO SERIES, HUITTINEN, FINLAND

61°08'N, 22°45'E, 58.9 m a.s.l.
Peat samples from Loimansuo bog.
Coll. and subm. 1972 by I. Vuorela.
Ref. Vuorela (1975).

Hel-355 420 ± 140
AD 1530

Sphagnum peat, 40-44 cm depth.
Comment(IV): Subzone boundary IXa/IXb with a clear rise in agricultural indicators especially Cerealia and Rumex. The decline in the loss-on-ignition curve indicates the simultaneous increase in eolian matter.

Hel-356 1970 ± 100
20 BC

Sphagnum peat, 146-150 cm depth.
Comment(IV): Decline in the cultural indicators of Bronze Age and Early Iron Age. The phase corresponds with Hel-353 (see Katinhännänsuo, Vihti).

Hel-357 3400 ± 130
1450 BC

Carex-Equisetum-Phragmites peat, 320-330 cm depth.
Comment(IV): The primal rise in Picea curve from 2 to 22 % AP.

Hel-358 See WATER SAMPLE SERIES Hel-326

Hel-359 - 371 See DISKO BUGT SERIES Hel-326

Hel-372 AKUJOKI, FINLAND 6970 ± 170
5020 BC

69°33'N, 26°15'E

Peat from a palsa bog, 360 cm depth.

Coll. and subm. 1972 by S. Syrilä.

Hel-373 ERDIGVAARA, FINLAND 8080 ± 220
6130 BC

69°38'N, 26°45'E

Peat from a palsa bog, 240 cm depth.

Coll. and subm. 1972 by S. Syrilä.

Hel-374 NILJOKI, FINLAND 8780 ± 170
6830 BC

69°43'N, 26°30'E

Peat from a palsa bog, 390 cm depth.

Coll. and subm. 1972 by S. Syrilä.

Hel-375 NAIRASSUO, KISKO, FINLAND 3680 ± 130
1730 BC

60°17'N, 23°20'E

Peat, 395-400 cm depth.

Coll. and subm. 1972 by J. Leino.

Comment(JL): Isolation of the basin from the Baltic.

(Leino 1973, Glückert 1976)

Hel-376 RAPASUO, PERNIÖ, FINLAND 3080 ± 180
1130 BC

60°11'N, 23°18'E

Peat, 470-475 cm depth.

Coll. and subm. 1972 by J. Leino.

Comment(JL): Immigration of Picea in Perniö. Isolation of the basin from the Baltic.

Hel-377 LAPINSUO I, KIIKALA, FINLAND 3560 ± 180
1610 BC

60°27'N, 23°25'E

Peat, 505-518 cm depth.

Coll. and subm. 1972 by J. Leino.

Comment(JL): Immigration of Picea in Kiikala.

(Leino 1973, Glückert 1976)

Hel-378 LAPINSUO II

8150 ± 180
6200 BC

Peat, 725-735 cm depth.
Coll. and subm. 1972 by J. Leino.
Comment(JL): Isolation of the basin from the Baltic. (Leino 1973).

Hel-379 2/71 MS, TUNUNUK PINGO, RICHARDS ISLAND, CANADA N.W.T.

5690 ± 150
3740 BC

69°02'N, 134°33'W, ca 16 m a.s.l.
Silt with organic material, 70 cm depth from the top of the pingo.
Comment(MS): The silt layers nearly vertical.

LAKE SOMPIO SERIES, SODANKYLÄ, FINLAND

68°06'N, 27°28'E, 241 m a.s.l.
Coll. 1968 and subm. 1972 by M. Salmi.

Hel-380 1/MS/So/68

6450 ± 230
4500 BC

Clay-mud, 205 cm depth from sediment surface.
Comment(MS): Pollen analysis indicates to border between older Betula and Pinus period. The age seems to younger than supposed.

Hel-381 2/MS/So/68

11140 ± 330
9190 BC

Clayey silt with organic material, 220 cm depth from sediment surface.
Comment(MS): Pollen analysis indicates the older Betula period. Between this and the upper sample (Hel-380) seems to be a strong hiatus.

Hel-382 3/MS/So/68

13520 ± 410
11570 BC

Clayey silt with organic material, 270 cm depth from sediment surface.
Comment(MS): Pollen analysis indicates lowest part of the older Betula period.

VÄHÄJÄRVI SERIES, HONKILAHTI, EURA, FINLAND

60°57'45"N, 22°12'E, 61.5 m a.s.l.
Coll. and subm. 1973 by M. Eronen.
Ref. Eronen (1974).

Hel-383

6960 ± 170
5010 BC

Clay-gyttja, 700-710 cm depth.
Comment(ME): Isolation of the basin from the Litorina Sea. Just above

the beginning of Tilia curve in pollen stratigraphy.

Hel-384 — 7360 ± 170 / 5410 BC

Clay-gyttja, 740-750 cm depth.

Comment(ME): Clypeus-limit in diatom stratigraphy, i.e. influx of saline water into the area.

Hel-385 — 8070 ± 250 / 6120 BC

Clay with some gyttja, 770-785 cm depth.

Comment(ME): Appearance of Mastogloia-flora in diatom stratigraphy, i.e. diatom flora indicative of slightly brackish water.

LÜTJENBURG NE SERIES, W GERMANY

Samples coll. 1972 by G. Glückert and Th. Ernst.
Ref. Ernst (1974).

Hel-386 P50/14 LIPPE — 4470 ± 170 / 2520 BC

Sandy peat at 2.3 m depth beneath NN. Covered with transgression sediments of the Baltic.

Hel-387 P50/18 LIPPE — 5930 ± 160 / 3980 BC

Wood in peat, 390 cm depth (see Hel-388).

Hel-388 P50/19 LIPPE — 5870 ± 200 / 3920 BC

Peat covered with transgression and marine deposit ca 4 m beneath NN (Baltic).

Hel-389 P50/5 EHMSER BERG — 1490 ± 100 / AD 460

Peat at 0.5 m beneath NN (Baltic).

BASTUBERG SERIES, PORVOO, FINLAND

60°21'30"N, 25°46'E, 28.5 m a.s.l.
Coll. and subm. 1973 by M. Eronen.
Ref. Eronen (1974).

Hel-390 — 5970 ± 200 / 4020 BC

Gyttja/peat, 125-130 cm depth.

Comment(ME): Infalling of the basin, which earlier had isolated

from the Litorina Sea.

Hel-391 6230 ± 220
4280 BC

Clayey gyttja, 137-142 cm depth.
Comment(ME): Isolation of the basin from the Litorina Sea.

Hel-392 7250 ± 240
5300 BC

Gyttja/clayey gyttja, 157-163 cm depth.
Comment(ME): Beginning of the Litorina transgression at the site. Beginning of Tilia curve in pollen stratigraphy.

Hel-393 7960 ± 180
6010 BC

Gyttja, 200-205 cm depth.
Comment(ME): Beginning of typical small-lake facies after isolation of the basin from Ancylus lake, before Litorina transgression.

Hel-394 8480 ± 190
6530 BC

Clay-gyttja, 220-230 cm depth.
Comment(ME): Isolation of the basin from Ancylus lake, before Litorina transgression.

Hel-395 See LEILÄNLAMMI SERIES Hel-286

THE EASTERN LAKE SUPERIOR REGION SERIES, CANADA

The following dates on mud (gyttja) from small lakes in the area of Sault Ste Marie and Wawa, east shore Lake Superior, Ontario, provide data on deglaciation history, shoreline displacement in the Lake Superior basin, and pollen stratigraphy (Saarnisto 1974, 1975). Sediment samples collected 1972 by M. Saarnisto using a Livingstone piston corer. Most samples are composites from equivalent stratigraphical levels in two or more replicate cores.

Hel-396 CROZIER LAKE 7590 ± 180
5640 BC

47°54'N, 84°41'W, 223.1 m a.s.l.
Mud, 12.18-12.28 m depth (water depth 8.9 m).
Comment(MS): Emergence of Crozier Lake from Superior basin waters.

Hel-397 FENTON LAKE 8100 ± 180
6150 BC

47°52'N, 84°52'W, 253.3 m a.s.l.

Clay-mud, 20.90-21.03 m depth (water depth 14.4 m).

Comment(MS): Emergence of Fenton Lake from Superior basin waters.

Hel-398 ANTOINE LAKE 8830 ± 200
6880 BC

47°53'N, 84°50'W, 271.0 m a.s.l.

Mud, 12.00-12.12 m depth (water depth 6.7 m).

Comment(MS): Emergence of Antoine Lake from Superior basin waters.

Hel-399 BLACKINGTON LAKE 8640 ± 280
6690 BC

47°51'N, 84°50'W, 260.9 m a.s.l.

Clay-mud, 12.53-12.65 m depth (water depth 5.4 m).

Comment(MS): Emergence of Blackington Lake from Superior basin waters.

Hel-401 BLACKINGTON LAKE 7650 ± 180
5700 BC

Mud, 11.90-12.00 m depth.

Comment(MS): Upper part of Birch pollen zone.

Hel-400 UPPER TWIN LAKE 10650 ± 265
8700 BC

46°32'N, 84°35'W, 302 m a.s.l.

Comment(MS): Emergence (isolation) of Upper Twin Lake from a Post-Main Algonquin lake. Basin of local herb and shrub dominated pollen zone.

Hel-476 UPPER TWIN LAKE 8760 ± 270
6810 BC

Detritus mud, 10.05-10.20 m depth.

Comment(MS): Spruce/Birch pollen zone boundary. Another date from the same horizon in nearby Prince Lake 9050 ± 110 (GSC-1913).

Hel-477 UPPER TWIN LAKE 9940 ± 210
7990 BC

Detritus mud, 10.30-10.40 m depth.

Comment(MS): Lower part of Spruce pollen zone.

Hel-464 ALFIES LAKE 6880 ± 170
4930 BC

47°51'N, 84°52'W, 288.3 m a.s.l.

Mud, 15.10-15.30 m depth (water depth 10.1 m).

Comment(MS): Birch/Pine pollen zone boundary.

Hel-465 ALFIES LAKE 8140 ± 190
6190 BC

Mud, 15.70-15.78 m depth.

Comment(MS): Middle of Birch pollen zone. Rise of Abies pollen curve. Beginning of Pinus strobus pollen curve.

THE JOCK LAKE SERIES, CANADA

48°47'N, 86°27'W, 290 m a.s.l.

The following dates on mud (gyttja) from an unnamed small lake, here called Jock Lake, near Marathon north shore Lake Superior, provide dating of pollen stratigraphy (absolute and relative) and the history of boreal forest in the upper Great Lakes area. Samples from the whole organic sediment sequence coll. 1973 by M. Saarnisto using a plexi-glass piston corer for the uppermost 1.5 m and a Livingstone piston corer for the rest of the sediment sequence. Samples are from single cores except Hel-402 which is a composite of three cores from equivalent stratigraphical level. (Saarnisto 1974, 1975)

Hel-402 9060 ± 200
7110 BC

Clay-mud, 14.93-15.03 m depth (water depth 7.2 m).

Comment(MS): Isolation (emergence) of Jock Lake from a Post-Minong lake in the Superior basin. Spruce pollen zone.

Hel-467 540 ± 130
AD 1410

Mud, 7.90-8.10 m depth.

Hel-468 1210 ± 100
AD 740

Mud, 8.90-9.10 m depth.

Hel-469 1960 ± 100
10 BC

Mud, 9.90-10.10 m depth.

Hel-470 2690 ± 110
740 BC

Mud, 10.90-11.10 m depth.

Hel-471 3440 ± 120
1490 BC

Mud, 11.90-12.10 m depth.

Hel-472 4440 ± 120
2490 BC

Mud, 12.90-13.10 m depth.

Hel-473 5870 ± 150
3920 BC

Mud, 13.95-14.05 m depth.

Hel-474 6980 ± 180
5030 BC

Mud, 14.45-14.55 m depth.

Hel-403 LEHIJÄRVI, HATTULA, FINLAND 1600 ± 150
AD 350

61°03'N, 24°18'E, 80.7 m a.s.l.
Gyttja with some clay, 130-140 cm depth.
Coll. and subm. 1973 by I. Vuorela.
Comment (IV): The rise of a continuous Cerealia curve accompanied by the rise in NAP and Juniperus.
(Vuorela 1975)

MUOTKATUNTURI SERIES, FINNISH LAPLAND

Samples from an organic layer between solifluction tongue and basement till in a meltwater channel. The dates give the maximum age of solifluction.
Coll. and subm. 1972 by A. Kejonen.

Hel-404 1/AK/72 3970 ± 130
2020 BC

Depth 50 cm.

Hel-405 2/AK/72 3460 ± 130
1510 BC

Depth 60 cm.

Hel-406 TURKU, FINLAND 640 ± 80
AD 1310

A wooden tap from a boat found from the mouth of the Aura-river.
Subm. 1973 by A. Siiriäinen.

PERÄPOHJOLA SERIES, FINLAND

Samples from three lake-sediment profiles investigated in a study of the vegetational history of Peräpohjola.
Coll. and subm. by C. Reynaud.
Ref. Reynaud (1974).

Hel-407 KARIJÄRVI 5810 ± 220
3860 BC

66°16'N, 24°11'E, 129 m a.s.l.

Gyttja, 80-90 cm depth.

Comment(CR): Just under the beginning of the Juniperus curve.

Hel-408 LAIHALAMPI 1 5590 ± 200
3640 BC

66°48'N, 22°35'E, 206 m a.s.l.

Gyttja, 95-105 cm depth.

Comment(CR): First apparition of Picea pollen.

Hel-409 LAIHALAMPI 2 8510 ± 320
6560 BC

Gyttja, 175-184 cm depth.

Comment(CR): Just above the limit Betula alba/Pinus-Betula biozones.

Hel-410 LAIHALAMPI 3 7740 ± 180
5790 BC

Gyttja, 213-220 cm depth.

Comment(CR): Minerogenic/organogenic transition.

Hel-411 LISTIMÄ-SUUAS 1 3210 ± 260
1260 BC

66°22'N, 27°06'E, 327 m a.s.l.

Gyttja, 60-70 cm depth.

Comment(CR): Spruce immigration, P°.

Hel-466 LISTIMÄ-SUUAS 2 8230 ± 250
6280 BC

Gyttja, 340 cm depth.

Comment(CR): Minerogenic/organogenic transition. Biozone limit between Betula nana and Herbs and Betula alba.

PÖKRÖNSUO SERIES, PUNKAHARJU, FINLAND

Gyttja samples from a bog profile.

Coll. and subm. 1973 by A. Siiriäinen.

General comment(AS): The samples date two separate clay-gyttja horizones which obviously represent two sudden regressions within the Saimaa Lake complex (cf. Saarnisto 1970). These regressions are later than the prominent regression caused by the formation of the Vuoksi-outlet of Saimaa c. 5000 BP (Saarnisto 1970), the former around 4200 BP and the latter around 550 BP. So far there are no other geological evidence relating to these late regressions but some archaeological correlations can be found.

Hel-412 — 4120 ± 170 / 2170 BC

Depth 1.35-1.40 m.

Hel-413 — 500 ± 130 / AD 1450

Depth 1.20-1.25 m.

Hel-414 — 560 ± 130 / AD 1390

Depth 1.05-1.10 m.

LOCH OF PARK SERIES I, ABERDEENSHIRE, SCOTLAND

57°05'N, 02°22'W, 70 m surface alt

Two samples from the lower (=Lateglacial) part of the sediment succession in the eastern end of the lake basin.

Coll. 1972 with piston sampler and subm. 1973 by Y. Vasari.

(Vasari 1977, Gray and Lowe 1977).

Hel-416 LOCH PARK 1 — 10280 ± 220 / 8330 BC

Gyttja/clay-gyttja, 340-360 cm below surface level.

Comment(YV): Age agrees closely with the dated horizon, end of Lateglacial vegetational revertence.

Hel-417 LOCH OF PARK 2 — 11900 ± 260 / 9950 BC

Gyttja/clay-gyttja, 483-495 cm below surface level.

Comment(YV): Close agreement with the accepted age for the dated horizon I/II pollen zone boundary.

LOCH KINORD SERIES II, ABERDEENSHIRE, SCOTLAND

57°05'N, 02°56'W, 175 m surface alt.

Samples from various levels of carr near the western end of the lake.

Coll. 1972 with piston sampler and subm. 1973 by Y. Vasari.

(Vasari 1977, Gray and Lowe 1977)

Hel-418 LOCH KINORD 1 — 11520 ± 220 / 9570 BC

Gyttja, 580-590 cm below peat surface.

Comment(YV): Date fits with the supposed (=Late Interstadial) age.

Hel-419 LOCH KINORD 2 — 10640 ± 260 / 8690 BC

Gyttja/clay-gyttja, 550-560 cm below peat surface.

Comment(YV): Fairly good agreement with other dates of the beginning of the Lateglacial vegetational revertence.

Hel-420 LOCH KINORD 3 — 10010 ± 220 / 8060 BC

Gyttja, 496-506 cm below peat surface.

Comment(YV): Date agrees with expected age (Lateglacial/Flandrian boundary).

Hel-421 LOCH KINORD 4 — 9820 ± 250 / 7870 BC

Gyttja, 465-475 cm below peat surface.

Comment(YV): Date of the III-IV/IV pollen zone boundary.

ABERNETHY FOREST SERIES, INVERNESS-SHIRE, SCOTLAND

57°14'N, 03°43'W, 221 m surface alt.

Samples taken from various levels of a pine bog in the shallow valley between Loch Garten and Loch Mallachie.

Coll. 1972 with piston sampler and subm. 1973 by Y. Vasari.

(Vasari 1977, Gray and Lowe 1977)

Hel-422 ABERNETHY FOREST 1 — 10230 ± 220 / 8280 BC

Gyttja, 467-477 cm below bog surface.

Comment(YV): Meant to date the end of the Lateglacial vegetational revertence (III/III-IV pollen zone boundary), the age agrees with expectations.

Hel-423 ABERNETHY FOREST 2 — 11260 ± 240 / 9310 BC

Gyttja, 498-513 cm below bog surface.

Comment(YV): Somewhat too old for the II/III pollen zone boundary.

Hel-424 ABERNETHY FOREST 3 — 12710 ± 270 / 10760 BC

Sandy gyttja, 512-528 cm below bog surface.

Comment(YV): Too old age supposed I/II pollen zone boundary. Hard water effect.

Hel-425 KUMPULAINEN, PIHTIPUDAS, FINLAND — 2420 ± 100 / 470 BC

Charcoal from a hearth, KM 16345:23

Subm. by T. Edgren.

Hel-426 PUOLARMETSÄ, ESPOO, FINLAND — 2790 ± 180 (840 BC)

Charcoal from a hearth, KM 18922

Subm. by T. Edgren.

Hel-427 PUOLARMETSÄ — 2460 ± 130 (510 BC)

Charcoal from a hearth , KM 18922

Subm. by T. Edgren.

Hel-428 MUTALA, PIELISENSUU, JOENSUU, FINLAND — 7160 ± 250 (5210 BC)

Charcoal from a hearth buried a transgressive layer of sand, KM 10640:6

Comment: The date obtained gives a maximum age for the Lake Saimaa transgression.

(Pälsi and Saurämo 1937, Saarnisto 1970, Siiriäinen 1974)

Hel-429 MYLLYKYLÄ, TAMMELA, FINLAND — 190 ± 90 (AD 1760)

Charcoal from a grave, KM 16290:19

Subm. by T. Edgren.

Comment: Battle Axe Culture. Expected age 2000 BC.

Hel-430 PERKIÖ, HAUHO, FINLAND — 180 ± 120 (AD 1770)

Charcoal from bottom of an assumed pit.

Subm. by T. Edgren.

Hel-431 RANTAKOSKI, KAUSTINEN, FINLAND — 3320 ± 120 (1370 BC)

Wood from sled, bog find, MUKTE 10231

Subm. by T. Edgren.

Hel-432 JERISJÄRVI, MUONIO, FINLAND — 240 ± 120 (AD 1710)

Wood from anchor.

Subm. by T. Edgren.

Hel-433 HAUTAPERÄ, KOKKOLA, FINLAND — 6150 ± 170 (4200 BC)

63°41'45"N, 25°21'37"E, 90.0 m a.s.l.

Peat between the crust and a thin layer of clay.

Coll. and subm. 1972 by R. Gardemeister.

Comment(R Aario): The obtained radiocarbon date is approximately the same obtained for the cessation of flow in the northern discharge channel (Hinkuanvirta) of ancient Päijänne. The pollen content of the sample further supports the date. The processes capable to shift the large boulder onto the dated peat layer were probably involved to the drying up of the ancient channel.
(Aario 1965, Eronen 1974)

KIRKKOJÄRVI SERIES, VEHMAA, FINLAND

60°41'N, 21°39'E, 14.6 m a.s.l.
Samples of gyttja.
Coll. and subm. 1973 by I. Vuorela.
Ref Vuorela (1975).

Hel-434 — 1440 ± 140
AD 510

Depth 32.5-42.5 cm.
Comment(IV): Subzone boundary IXa/IXb clearly indicated by the rise in Cerealia, NAP and Juniperus. Pollen stratigraphically comparable with Hel-403 (Lehijärvi) and Hel-509 (Armijärvi).

Hel-435 — 2480 ± 120
530 BC

Depth 122.5-132.5 cm.
Comment(IV): Decline in cultural indicators of Bronze Age including Cerealia. The phase corresponds with Hel-356 (Loimansuo).

Hel-436 - 438 See DISKO BUGT SERIES Hel-326

LOVOJÄRVI SERIES, LAMMI, FINLAND

61°05'N, 25°02'E, 108.2 m a.s.l.
Coll. 1973 by K. Tolonen and P. Huttunen using a Russian peat sampler (1000 x 100 mm) or a Ressinger corer (Hel-445, Hel-446 and Hel-491).
Subm. by K. Tolonen.
For ref. see Huttunen and Tolonen (1977), Saarnisto, Huttunen and Tolonen(1977).

Hel-439 LOVO 1 — 1050 ± 140
AD 900

Detritus gyttja, 18.00-18.10 m depth (17.5 m water).
Comment(KT): Zone IX. Pollenstratigraphically some 800 years too old. According to the varve counts and to the measurements of the recent

rate of sedimentation the dating result is about 860 years too old due to the increased allochthonous input of organic matter into the basin because of cultural erosion in the drainage area.

Hel-440 LOVO 1 1120 ± 100
AD 830

Detritus gyttja, 18.5-18.60 m depth.
Comment(KT): Zone IX. About 720 years too old, comp. Hel-439.

Hel-441 LOVO 1 1580 ± 100
AD 370

Detritus gyttja, 19.00-19.10 m depth.
Comment(KT): Zone IX. About 980 years too old, comp. Hel-439.

Hel-442 LOVO 1 2030 ± 140
80 BC

Detritus gyttja, 19.50-19.60 m depth.
Comment(KT): Zone IX. Cerealia^{+}(incl. Secale), stratigraphically some 200 years(?) too old.

Hel-443 LOVO 1 2500 ± 180
550 BC

Detritus gyttja, 20.10-20.20 m depth.
Comment(KT): Zone IX. Forest clearance (spruce decline etc.). Stratigraphically some 800 years too old.

Hel-444 LOVO 1a 2260 ± 170
310 BC

Detritus gyttja, 19.67-19.90 m depth.
Comment(KT): Zone IX. Cerealia$^{\circ}$(incl. Secale). Stratigraphically some 600 years too old.

Hel-445 LOVO 1 a+b 4520 ± 140
2570 BC

Detritus gyttja, 21.25-21.30 m depth.
Comment(KT): Stratigraphically consistent. Little below Picea.$^{+}$

Hel-446 LOVO 1 5730 ± 150
3780 BC

Detritus gyttja, 21.77-21.80 m depth.
Comment(KT): Stratigraphically consistent. From a period between Tilia^{+} and Picea.$^{\circ}$

Hel-491 LOVO 1b 3820 ± 130
1870 BC

Detritus gyttja, 20.77-20.80 m depth.
Comment(KT): Stratigraphically consistent. After the generalization

of spruce (Picea abies).

Hel-579 LOVO C1 2620 ± 180
670 BC

Coarse detritus gyttja, 9.30-9.40 m depth (7.0 m water).
Comment(KT): Zone IX. From the beginning of forest clearence and cultivation of Cereals. Stratigraphically some 800 years too old. Comp. Hel-439.

Hel-580 LOVO C2 2280 ± 130
330 BC

Coarse detritus gyttja, 8.80-8.90 m depth.
Comment(KT): Zone IX. Some 500 years(?) too old. Comp. Hel-439 and Hel-444. Cerealia.+

Hel-682 LOVO C3 1210 ± 100
AD 740

Coarse detritus gyttja, 7.30-7.35 m depth.
Comment(KT): Zone IX. Stratigraphically some 700 years too old. Comp. Hel-439.

Hel-683 LOVO C4 1130 ± 140
AD 820

Coarse detritus gyttja, 7.90-8.00 m depth.
Comment(KT): Zone IX. Stratigraphically some 700 years too old. Comp. Hel-439 and Hel-440.

Hel-684 LOVO C5 2160 ± 110
210 BC

Coarse detritus gyttja, 8.25-8.30 m depth.
Comment(KT): Zone IX. Stratigraphically some 500 years(?) too old. Comp. Hel-439.

BORRIS HEDE SERIES, W DENMARK

55°55'N, 08°43'E
Samples from a podzol profile.
Coll. and subm. 1973 by E. Jauhiainen.

Hel-447 BORRIS HEDE A 180 ± 90
AD 1770

Depth 20 cm.

Hel-448 BORRIS HEDE B 520 ± 140
AD 1430

Depth 30 cm.

Hel-449 BORRIS HEDE C — 2200 ± 110 / 250 BC

Depth 40 cm.

Hel-450 PORRASLAMPI, KUORTANE, FINLAND — 7750 ± 260 / 5800 BC

62°52'30"N, 23°31'E, 90.5 m a.s.l.
Clay-gyttja, 425-430 cm depth.
Coll. and subm. 1973 by M. Eronen.
Comment(ME): Just above isolation point in stratigraphy. The lake has isolated from the Baltic before beginning of the Litorina Sea.
(Eronen 1974)

AHMASJÄRVI SERIES, UTAJÄRVI, FINLAND

64°29'N, 26°27'E, 98.5 m a.s.l.
Samples coll. and subm. 1973 by M. Eronen.
Ref. Eronen (1974)

Hel-451 — 6540 ± 200 / 4590 BC

Clay-gyttja, 428-435 cm depth.
Comment(ME): Appearance of small-lake diatoms. Below this point there has been a facies poor in diatoms in the stratigraphy.

Hel-452 — 6750 ± 240 / 4800 BC

Gyttja-clay/clay-gyttja, 460-470 cm depth.
Comment(ME): Facies poor in diatoms. After isolation from the Baltic there is a facies with exceptionally low diatom content in the stratigraphy of this lake.

Hel-453 — 8370 ± 280 / 6420 BC

Gyttja-clay, 490-500 cm depth.
Comment(ME): Isolation of the basin from the ancient Baltic. Disappearance of diatoms in the sediment at the same time.

Hel-490 — 7860 ± 210 / 5910 BC

Gyttja-clay, 473-485 cm depth.
Comment(ME): Facies poor in diatoms. After isolation from the ancient Baltic there is a facies with exceptionally low diatom content in the stratigraphy of this lake.

Hel-454 - 455 See DISKO BUGT SERIES Hel-326

LOVOJÄRVI SERIES, ESPOO / KIRKKONUMMI, FINLAND

60°12'30"N, 24°30'E

Gyttja-samples coll. with a Russian peat sampler (1000 x 100 mm) and subm. 1973 by K. Tolonen.

Ref. Tolonen, Siiriäinen and Thompson (1975a, 1975b), Tolonen, Siiriäinen and Hirviluoto (1978).

Hel-456 LOJ A 1290 ± 120
AD 660

Depth 172-177 cm.

Comment(KT): Zone IX. Stratigraphically consistent. Just below a sediment contact coarse detritus gyttja/clay, the sample containing Secale and other cereals. Contemperanous with the samples (Hel-457 - 459) from the same contact from profiles B, C, D and LAPP A (Hel-461).

Hel-457 LOJ B 1180 ± 120
AD 770

Depth 130-140 cm.

Hel-458 LOJ C 1250 ± 140
AD 700

Depth 49-56 cm.

Hel-459 LOJ D 1030 ± 140
AD 920

Depth 54-63 cm.

Hel-460 LOJ B1 1740 ± 130
AD 210

Depth 180-190 cm.

Comment(KT): Zone IX. Stratigraphically consistent.

LAPPTRÄSK SERIES, KIRKKONUMMI, FINLAND

Samples coll. with a Russian peat sampler and subm. 1973 by K. Tolonen.

Ref. Tolonen, Siiriäinen and Thompson (1975a, 1975b), Tolonen, Siiriäinen and Hirviluoto (1978).

Hel-461 LAPP A1 1320 ± 140
AD 630

Gyttja/clay-gyttja, 34-42 cm depth.

Comment(KT): Same horizon as in Hel-456 - 459.

Hel-462 LAPP A2 2850 ± 140
900 BC

Gyttja, 111-120 cm depth.
Comment (KT): Zone VIII/IX boundary.

Hel-463 TERVOLA, TAIVALKOSKI, FINLAND 1360 ± 100
AD 590

Organic material in sand from a minerogenic/organogenic transition in a terrace of river Kemi. Depth 180 cm from the top of the horizon investigated.
Coll. and subm. 1973 by C. Reynaud and K. Tobolski.
Ref. Reynaud and Tobolski (1974).

Hel-464 - 465 See THE EASTERN LAKE SUPERIOR REGION SERIES Hel-396

Hel-466 See PERÄPOHJOLA SERIES Hel-407

Hel-467 - 474 See JOCK LAKE SERIES Hel-402

KILTERI SERIES, VANTAA, FINLAND

Samples coll. by L. Väkeväinen and M. Núñez.

Hel-475 STIG 1 2380 ± 110
430 BC

Charcoal, 74-80 cm depth.
For comment see Hel-635.

Hel-635 STIG 2 2290 ± 150
340 BC

Charcoal, 58-66 cm depth.
Comment for Hel-475 and Hel-635 (MN): These samples consist of charcoal found at different depths within the same grave pit. This is one of two pits surrounded by a stone setting and morphologically distinct from the other seven simple grave-like pits also found at the site (Núñez 1975, 1978b, Väkeväinen 1975: cf. Hel-644, Hel-645, Hel-794). Stratigraphically the deposition of both charcoal samples must be contemporaneous: when the burial pit was filled. There is no guarantee that the charcoal is contemporaneous with the burial, the date only giving a terminus post quem for the interement. The remains of hearths in association with the structure suggest that the charcoal is from man-made fire, perhaps related to burial rituals (cf. Väkeväinen 1975). The pre-roman period dates agree with the Morby settlement of the area, the closest known site being that of Jönsas a few hundred metres away (Núñez 1978a).

Hel-599 KILTERI I 156 O/6 7050 ± 170
5100 BC

Charcoal, depth 60-70 cm.

For comment see Hel-629.

Hel-600 KILTERI I 156 N,O/5-6 4760 ± 170
2810 BC

Charcoal rich earth, 50-70 cm depth.

Acid treatment only.

For comment see Hel-629.

Hel-629 KILTERI I 156 N,O/5-6 5550 ± 180
3600 BC

Charcoal rich earth, 50-70 cm depth.

Comment(MN): All three samples are from a single large hearth. Hel-599 consisted of charcoal removed from the matrix of sooty earth forming a lens at the base of the hearth pit. The date yielded by Hel-599 is in good agreement with the Suomusjärvi-Culture artifacts recovered from the site (Väkeväinen 1975) and with the geological dating of c. 7000 BP based on the altitude of the site above the present sea level (Núñez 1978a, 1979). The experiment of dating the sooty earth showed, as expected, that it was not as reliable as charcoal for dating purpose. Hel-629, which was stratigraphically contemporaneous and pre-treated identically as Hel-599, yielded a 1500 year younger date. This probably due to intrusive younger plant material. The age of Hel-600 was even younger, no doubt due to the presence of humus, which was not removed as in Hel-599 and Hel-629.

Hel-630 KILTERI I 155 Q/4 4540 ± 160
2590 BC

Charcoal, 40-50 cm depth.

Comment(MN): The sample comes from a small isolated hearth within the site of Kilteri. It differs from the age indicated by Hel-599, and the archaeological and geological dating of the site (cf. Väkeväinen 1975, Núñez 1978a, 1978b, 1979); but on the other hand it agrees well with the Corded Ware settlement of the area. There is abundant evidence of this culture in the near-by site of Jönsas, only a few hundred metres away from Kilteri (Núñez 1978a).

Hel-644 KILTERI I, HAUTA 2 370 ± 140
AD 1580

Charcoal, 76-81 cm depth.

For comment see Hel-794.

Hel-645 KILTERI I, HAUTA 7 420 ± 140
AD 1530

Charcoal, 76-81 cm depth.
For comment see Hel-794.

Hel-794 KILTERI I, HAUTA 5 300 ± 90
AD 1650

Oak acorns from grave-like pit.
Comment(MN): These samples are from 3 of 7 similar pits which were formerly interpreted as graves (cf. Väkeväinen 1975, Núñez 1975). However, these 3 dates have lead to a revision of the former interpretations, the hypothesis of inhumation burials is no longer tenable (Núñez 1978b). The dates are in good agreemen with each other and there is no reason to belive that the 7 pits in question are older than c. 300 radiocarbon years. It is worth mentioning that the area has been settled already during the Middle Ages, the earliest written mentions dating to the Early 15th century.

Hel-476 - 477 See THE EASTERN LAKE SUPERIOR REGION SERIES Hel-396

GALLTRÄSK SERIES, KAUNIAINEN, FINLAND

Gyttja-samples coll. 1972 with a Livingstone sampler (1800 x 70 mm) by J. Meriläinen and K. Tolonen. Subm. by K. Tolonen.
Ref. Tolonen, Siiriäinen and Hirviluoto (1978).

Hel-478 1440 ± 100
AD 510

Depth 180-182 cm.
Comment(KT): Cerealia (Secale^{+}) in zone IX. Stratigraphically consistent.

Hel-479 2190 ± 110
240 BC

Depth 195-200 cm.
Comment(KT): Zone IX. Cerealia^{o}(Triticum type). Stratigraphically consistent.

Hel-480 6130 ± 160
4180 BC

Depth 325-330 cm.
Comment(KT): Stratigraphically consistent. From the period between Tilia^{+} and Picea.^{o}

Hel-481 6290 ± 190
4340 BC

Depth 340-350 cm.

Comment(KT): Stratigraphically consistent. Comp. Hel-480. According to diatom analysis (K. Tolonen) the basin isolated from the Baltic at the 350 cm level.

Hel-482 6540 ± 190
4590 BC

Depth 365-370 cm.

Comment(KT): Stratigraphically consistent. From Tilia.° Brackish water stage according to diatom counts.

KIVILOMPOLON JÄNKÄ SERIES, YLITORNIO, FINLAND

66°18'30"N, 24°17'E, 110 m a.s.l.

Coll. and subm. 1973 by M. Eronen.

Ref. Eronen (1974).

Hel-483 7590 ± 230
5640 BC

Gyttja, 280-285 cm depth.

Comment(ME): Isolation of the basin from the ancient Baltic.

Hel-484 8010 ± 200
6060 BC

Silt with some gyttja, 291-297 cm depth.

Comment(ME): Layer deposited just before the isolation of the basin from the ancient Baltic.

VÄHÄ-VUOTUNKI SERIES, YLIKIIMINKI, FINLAND

64°55'30"N, 26°30'E, 93.5 m a.s.l.

Coll. and subm. 1973 by M. Eronen.

Ref. Eronen (1974).

Hel-485 6480 ± 150
3530 BC

Gyttja, 405-410 cm depth.

Comment(ME): Isolation of the basin from the Litorina Sea.

Hel-486 6980 ± 220
5030 BC

Gyttja-clay, 424-430 cm depth.

Comment(ME): Clypeus-limit in the diatom stratigraphy, i.e. influx of saline water into the area.

Hel-488 8450 ± 240
6500 BC

Gyttja-clay, 467-477 cm depth.
Comment(ME): Layer of gyttja-clay above sand layer, deposited in the ancient Baltic.

Hel-487 See VAREVUOMA SERIES Hel-276

Hel-489 4160 ± 130
2210 BC

Shellgravel
Subm. by O. Granö.

Hel-490 See AHMASJÄRVI SERIES Hel-451

Hel-491 See LOVOJÄRVI SERIES Hel-439

MASCARDI SERIES, PATAGONIA

Peat samples from profile P 16.
Coll. 1937-38 and subm. 1973 by V. Auer.
Ref. Auer (1958, 1965).

Hel-492 8700 ± 270
6750 BC

Samples 715 P, 717-723 P (tephra I).

Hel-552 4700 ± 120
2750 BC

Samples 691-698 P (tephra II).

Hel-553 1030 ± 160
AD 920

Samples 668-671 P (tephra III).

KAREVANSUO SERIES, MASKU, FINLAND

(671478, 56324), 35 m a.s.l.
Coll. and subm. 1973 by G. Glückert.
Ref. Glückert (1975, 1976, 1977).

Hel-493 3170 ± 170
1220 BC

C-peat, 265 cm depth.
Comment(GG): Immigration of Picea in the Turku area.

Hel-495 — 3790 ± 190 / 1840 BC

Gyttja, 285-290 cm depth.

Comment(GG): Subboreal Betula-maximum in the area.

Hel-494 NUMMENSUO, PAIMIO, FINLAND — 5500 ± 180 / 3550 BC

(670070, 42968), 46 m a.s.l.

Gyttja, 360-365 cm depth.

Coll. and subm. 1973 by G. Glückert. Ref. Glückert (1975, 1976, 1977).

Comment(GG): Isolation of the basin from the Litorina Sea corresponding to the shoreline L II in SW Finland.

RAHOLANSUO SERIES, AURA, FINLAND

(672102, 42290), 65 m a.s.l.

Coll. 1973 and subm. 1973-74 by G. Glückert. Ref. Glückert (1976).

Hel-496 — 4820 ± 120 / 2870 BC

Gyttja, 300-305 cm depth.

Comment(GG): Late-Atlantic Betula-maximum in the area.

Hel-526 — 3220 ± 240 / 1270 BC

Carex peat, 242-246 cm depth.

Comment(GG): Immigration of Picea in Aura.

Hel-527 — 6500 ± 175 / 4550 BC

Clayey gyttja, 330-341 cm depth.

Comment(GG): Beginning of the continuous pollen curve of Tilia (T^{o}) in Aura.

BRUVATNET SERIES, VARANGERBOTN, NORWAY

$70^{o}11'$ N, $28^{o}25'$ E, 119 m a.s.l.

Gyttja samples coll. and subm. 1973 by H. Hyvärinen.

General comment(HH): Samples date a section of lake sediments spanning a period from Younger Dryas to present. Dates are internally consistent and suggest an even rate of sedimentation. The site is located immediately outside the Sør-Varanger moraines (Main sub-stage), and the basal date (Hel-497), representing pollen zone transition Birch/Artemisia, is consistent with the dating of these moraines to Younger Dryas.

Ref. Hyvärinen (1975).

Hel-497 BR 1 — 10280 ± 260 / 8330 BC

Depth 175-180 cm.

Hel-498 BR 2 — 8810 ± 190 / 6860 BC

Depth 145-150 cm.

Hel-499 BR 3 — 6970 ± 200 / 5020 BC

Depth 115-120 cm.

Hel-500 BR 4 — 4830 ± 190 / 2880 BC

Depth 85-90 cm.

Hel-501 BR 5 — 3890 ± 170 / 1940 BC

Depth 55.0-62.5 cm.

LOCH CUITHIR SERIES, ISLE OF SKYE, SCOTLAND

57°34'N, 06°15'W, 165 m surface alt.

Samples from various levels of a mire on the shore of the loch. Coll. 1972 with piston sampler and subm. 1973 by Y. Vasari. (Vasari 1977, Gray and Lowe 1977).

Hel-502 LOCH CUITHIR — 9400 ± 210 / 7450 BC

Diatom gyttja from 470-480 cm below mire surface.

Comment(YV): Age for the spread of Corylus, i.e. the IV/V pollen zone boundary.

Hel-503 LOCH CUITHIR — 9660 ± 250 / 7710 BC

Diatom gyttja from 494-504 cm below mire surface.

Comment(YV): Beginning of the second Juniperus maximum in the early Flandrian.

Hel-504 LOCH CUITHIR — 10060 ± 270 / 8110 BC

Clay-gyttja from 509-519 cm below mire surface.

Comment(YV): End of Lateglacial vegetational revertence.

HOWTH SERIES, IRELAND

53°23'N, 06°08'W, about 4 m a.s.l.
Shells from gravels, underneath 1.5 m sand, of tombolo connecting Howth, north of Dublin, to the mainland.
Subm. by J. Donner.

Hel-505 — 4830 ± 140 / 2880 BC
Ostrea edulis Linné

Hel-506 — 4460 ± 140 / 2510 BC
Spisula elliptica elliptica (Brown)

KALMANKALTIO SERIES, FINLAND

Wood samples coll. and subm. 1973 by M. Eronen.

Hel-507 KALMANKALTIO II — 410 ± 90 / AD 1540
Topogr. map no 283112, N 760395, E 53070/24°, about 380 m a.s.l.
Comment(ME): Pine stem first covered by dune sand, later exposed by deflation. Found in the pine tree limit zone.

Hel-514 KALMANKALTIO I — 320 ± 100 / AD 1630
Topogr. map no 283112, N 760395, E 53070/24°, about 365 m a.s.l.
Comment(ME): Pine stump found in a dune area outside the present pine forest limit in northern Finnish Lapland.

Hel-515 KALMANKALTIO IV — recent
Topogr. map no 283112, N 760300, E 53010/24°, about 375 m a.s.l.
Comment(ME): Pine stump found on the ground outside the present pine forest area in northern Finnish Lapland.

Hel-508 RAASTAHARJU, FINLAND — 6030 ± 150 / 4080 BC
Topogr. map(1:100 000) no 2814, N 761450, E 47290/24°, about 380 m a.s.l.
Wood from a bog.
Coll. and subm. 1973 by M. Eronen.

Comment(ME): Pine stump found floating in a wet depression on a small mire, in the zone of isolated pine trees in northern Finnish Lapland.

ARMIJÄRVI SERIES, HATTULA, FINLAND

61°02'N, 24°21'E, 87.9 m a.s.l.
Gyttja samples coll. and subm. 1973 by I. Vuorela.
Ref. Vuorela (1975).

Hel-509 — 1380 ± 100 AD 570

Depth 65-75 cm.
Comment(IV): Subzone boundary IXa/IXb indicated by the beginning of a continuous Cerealia curve and a rise in NAP.

Hel-510 — 2270 ± 110 320 BC

Depth 85-95 cm.
Comment(IV): The earliest isolated occurence of Cerealia pollen accompanied by several cultural indicators such as Elytrigia repens, Chenopodiaceae and Rumex.

Hel-511 — 3300 ± 100 1350 BC

Depth 102.5-112.5 cm.
Comment(IV): The primal rise in Picea curve from 2 to 20 % AP.

KAKTSAVARRI SERIES, FINLAND

Two wood samples from pine trunks found lying on the ground, on the slope of a fjeld above the present pine forest limit.
Coll. and subm. 1973 by M. Eronen.

Hel-512 KAKTSAVARRI IV — 320 ± 100 AD 1630

Topogr. map no 382406, N 769510, E 47990/27°, about 305 m a.s.l.

Hel-513 KAKTSAVARRI V — 720 ± 90 AD 1230

Topogr. map no 382406, N 769510, E 47980/27°, about 310 m a.s.l.

Hel-514 - 515 See KALMANKALTIO SERIES Hel-507

HIETATIEVAT SERIES, ENONTEKIÖ, FINLAND

68°28'N, 24°42'E

Samples coll. and subm. 1973 by M. Seppälä.

General comment(MS): Deflation and forest fires dated from buried soil.

Hel-516 HIE-1 — 3230 ± 120 / 1280 BC

Charcoal and humus in sand, 19-21 cm depth.

Hel-517 HIE-3 — 140 ± 90 / AD 1810

Charred wood from the surface.

Hel-545 HIE-4 — 570 ± 90 / AD 1380

Charcoal in sand, 105-108 cm depth.

Hel-546 HIE-6 — 1220 ± 100 / AD 730

Charcoal in sand, 74-75 cm depth.

Hel-576 HIE-2 — 1720 ± 130 / AD 230

Charcoal and humus in sand, 10-12 cm depth.

Hel-588 HIE-5 — 480 ± 110 / AD 1470

Charcoal in sand, 110-113 cm depth.

Hel-589 HIE-7 — 430 ± 120 / AD 1520

Charcoal in sand, 70-72 cm depth.

Hel-590 HIE-8 — 3690 ± 150 / 1740 BC

Charcoal in sand, 17-20 cm depth.

Hel-591 HIE-9 — 1020 ± 120 / AD 930

Charcoal in sand, 51-53 cm depth.

Hel-592 HIE-10 — 170 ± 120 / AD 1780

Charcoal in sand, 48-49 cm depth.

Hel-518 - 519 See KANGERJOKI SERIES Hel-317

Hel-520 RUKATUNTURI, KUUSAMO, FINLAND 790 ± 100
AD 1160

Peat, 16-18 cm depth.
Coll. and subm. 1969 by S. Hicks.
Comment(SH): As far the pollen evidence allows the correlation of this horizon with other diagrams (Kangerjoki Hel-317, Särkikangas Hel-631), then the dating is in agreement.
(Hicks 1976)

AKUVAARA SERIES, INARI, FINLAND

69°07'30"N, 27°41'E, 170 m a.s.l.
Coll. and subm. 1973 by H. Hyvärinen.
General comment(HH): Samples date a Flandrian lake sediment section. The dates are internally consistent and suggest an even sedimentation rate.
(Hyvärinen 1975)

Hel-521 AKU 1 8840 ± 170
6890 BC
Gyttja, 145-150 cm depth.

Hel-522 AKU 2 7770 ± 220
5820 BC
Gyttja, 122.5-127.5 cm depth.

Hel-523 AKU 3 6080 ± 170
4130 BC
Gyttja, 95-100 cm depth.

Hel-524 AKU 4 4180 ± 180
2230 BC
Gyttja, 65-70 cm depth.

Hel-525 AKU 5 2620 ± 170
670 BC
Gyttja, 35-40 cm depth.

Hel-526 - 527 See RAHOLANSUO SERIES Hel-496

LAIKIPIA SERIES, KENYA

Samples coll. and subm. 1973 by Å. Siiriäinen.
Ref. Gramly (1976), Maggs (1977), Siiriäinen (1977a, 1977b).
General comment for Hel-528, 529, 532 and 534 (AS): The dates refer to the termination of the Late Stone Age lithic technology in the Laikipia highlands, Central Kenya.

Hel-528 KFR-A 12 recent

Scattered pieces of charcoal from layer 1.

Hel-529 KFR-A 12 recent

Charcoal from layer 1.

Hel-532 KFR-A 12 980 ± 100
AD 970

Charcoal from layer 3.

Hel-534 KFR-A 12 1100 ± 120
AD 850

Bone from layer 5.

General comment for Hel-530, 531 and 533 (AS): The dates refer to the Late Stone Age in the Laikipia highlands of Central Kenya.

Hel-530 KFR-A 4 2100 ± 110
150 BC

Charcoal from layer 2 of trench I.

Hel-531 KFR-A 4 530 ± 100
AD 1420

Charcoal from a hearth in layer 2 of trench III.

Hel-533 KFR-A 4 1900 ± 90
AD 50

Charcoal from layer 3 of trench I.

Hel-535 Gv Jm/22, LUKENYA HILLS 9910 ± 300
7960 BC

Bone from an occupation layer of a rockshelter, 1.90 m depth.
Comment(AS): The expected age, according to other radiocarbon datings, stratigraphy and archaeological material, was c. 15000 BP.

MUOTKATUNTURIT SERIES, FINLAND

Samples from different sites in the Muotkatunturit area are collected from podzol-layers (except Hel-568) and are supposed to give the maximum age of solifluction.
Coll. and subm. 1972 by A. Kejonen.

Hel-536 KUOSSAVAARA 4290 ± 130
2340 BC

Depth 50 cm.

Hel-537 RADNOSKAIDI — 3850 ± 120 / 1900 BC

Depth 60 cm.

Hel-538 AVDSEKASOAIVI — 1900 ± 100 / AD 50

Depth 50 cm.

Hel-539 KASKOKIELAS — 4390 ± 110 / 2440 BC

Depth 40 cm.

Hel-566 TSUANJOAIVI 1 — 4990 ± 180 / 3040 BC

Depth 60 cm.

Hel-567 TSUANJOAIVI 2 — 4270 ± 170 / 2320 BC

Depth 50 cm.

Hel-568 NJURGUMOAIVI — 1970 ± 140 / 20 BC

Peat, 45 cm depth.

SUOVALAMPI SERIES, INARI, FINLAND

69°35'N, 28°50'E, 104 m a.s.l.

Coll. and subm. 1973 by H. Hyvärinen.

General comment (HH): Samples date a Flandrian lake sediment section. Dates are internally consistent and suggest an even rate of sedimentation. (Hyvärinen 1975)

Hel-540 SUO 1 — 8710 ± 240 / 6760 BC

Gyttja, 150-155 cm depth.

Hel-541 SUO 2 — 7310 ± 210 / 5360 BC

Gyttja, 122-130 cm depth.

Hel-542 SUO 3 — 5600 ± 140 / 3650 BC

Gyttja, 95-103 cm depth.

Hel-543 SUO 4 — 4040 ± 150 / 2090 BC

Gyttja, 65-75 cm depth.

Hel-544 SUO 5 3160 ± 150
1210 BC

Gyttja, 35-45 cm depth.

Hel-545 - 546 See HIETATIEVAT SERIES Hel-516

Hel-547 PAARSKYLÄ, PERNIÖ, FINLAND 720 ± 100
AD 1230

Wood from plough, KM 13404/1
For ref. see Tools and Tillage Vol. II:4 (1975) p.255.

Hel-548 HIRVENSALMI, FINLAND 300 ± 90
AD 1650

Wood from ski, bog find, MVKT 10299.

Hel-549 KARTTU, IKAALINEN, FINLAND 1530 ± 130
AD 420

Wood from ski, MVKT 10327.

Hel-550 NELLIM, INARI, FINLAND recent

Wood from boat, MVKT 10328.

Hel-551 LUUTNANTINSUO, SAARIJÄRVI, FINLAND 230 ± 140
AD 1720

Wood from spade, bog find, Saarijärvi museum no 178.

Hel-552 - 553 See MASCARDI SERIES Hel-492

TÖRMÄVAARA SERIES, TERVOLA, FINLAND

Charcoal samples coll. by M. Suni and subm. 1974 by A. Siiriäinen.
General comment(AS): There are no archaelogical evidence for habitation at the site during the period indicated by the results. All the artefacts belong to Middle Neolithic period.
Ref. Siiriäinen (1978).

Hel-554 470 ± 120
AD 1480

19008:1347

Hel-555 580 ± 140
AD 1370

19008:1348

Hel-556 680 ± 140
AD 1270

19008:603

Hel-557 KAUPINTIE, HELSINKI, FINLAND 2170 ± 140
AD 220

Charcoal, 19319:581
Coll. by M. Suni and subm. 1974 by A. Siiriäinen.

HAFRATJÖRN SERIES, KAGAÐARHÓLL, HÚNAVATNSSÝSLA, N ICELAND

65°35'N, 20°08'W, ca 130 m a.s.l.
Samples from various levels of a series from the overgrown Hafratjörn near Kagaðarhóll.
Coll. 1973 with piston sampler and subm. 1974 by Y. Vasari.
Continuation of earlier studies (Vasari 1972, 1973) Hel-146 and Hel-159.

Hel-558 HAFRATJÖRN 4410 ± 130
2460 BC

Gyttja from 290-300 cm below surface.
Comment(YV): Stratigraphically immediately above a liparitic tephra layer.

Hel-559 HAFRATJÖRN 5020 ± 130
3070 BC

Gyttja from 330-340 cm below surface.
Comment(YV): Pollen-analytically end of lower birch period.

Hel-560 HAFRATJÖRN 6900 ± 150
4950 BC

Gyttja from 435-445 cm below surface.
Comment(YV): Pollen-analytically beginning of lower birch period.

Hel-561 HAFRATJÖRN 7060 ± 150
5110 BC

Gyttja from 470-480 cm below surface.
Comment(YV): Lithostratigraphically below a liparitic tephra layer.

Hel-562 HAFRATJÖRN 8040 ± 170
6090 BC

Gyttja from 595-605 cm below surface.
Comment(YV): Transient peak in Betula pollen curve.

Hel-563 HAFRATJÖRN 8570 ± 150
6620 BC

Gyttja from 640-650 cm below surface.
Comment(YV): Rational limit of Betula pollen curve.

Hel-564 ISOSUO, TURKU, FINLAND 4950 ± 140
3000 BC

(671054, 56986), 42 m a.s.l.
Coll. 1972 and subm. by G. Glückert.
Comment(GG): Isolation of the basin from the Litorina Sea corresponding to the shoreline L II in SW Finland.
(Glückert 1975, 1976, 1977)

Hel-565 KUUSRAHKA, AURA, FINLAND 3090 ± 160
1140 BC

(672572, 42696), 64 m a.s.l.
Carex peat, 220 cm depth.
Coll. 1973 and subm. by G. Glückert.
Comment(GG): Immigration of Picea in Aura. Compare Hel-526.
(Glückert 1975, 1976)

Hel-566 - 568 See MUOTKATUNTURIT SERIES Hel-536

Hel-569 ULVILA, FINLAND 120 ± 140
AD 1830

Wood from an excavation site in the area of the ancient Ulvila.
Coll. by I. Kauhanen and subm. by E. Ilvonen.

LÓMATJÖRN SERIES, BISKUPSTUNGUR, ÁRNESSÝSLA, S ICELAND

64°16'N, 20°21'W, ca 100 m a.s.l.
Samples from various levels of a mire on the northern side of Lómatjörn.
Coll. 1973 with piston sampler and subm. 1974 by Y. Vasari.
Continuation of earlier studies (Vasari 1972, 1973).

Hel-570 LÓMATJÖRN 8380 ± 220
6430 BC

Gyttja, 620-630 cm below surface.
Comment(YV): Pollen-analytically birchless juniper phase.

Hel-571 LÓMATJÖRN 8120 ± 170
6170 BC

Gyttja, 579-589 cm below surface.
Comment(YV): Pollen-analytically birch-juniper-NAP phase.

Hel-572 LÓMATJÖRN 7310 ± 160
5360 BC

Gyttja, 515-525 cm below surface.

Comment(YV): Pollen-analytically fall of Cyperaceae and rise of Betula pollen.

Hel-573 LÓMATJÖRN 5010 ± 130
3060 BC

Gyttja, 460-470 cm below surface.
Comment(YV): Pollen-analytically end of juniper maximum.

Hel-574 LÓMATJÖRN 3390 ± 100
1440 BC

Gyttja, 324-334 cm below surface.
Comment(YV): Lithostratigraphically immediately below a fairly thick basaltic tephra layer. Pollen-analytically Betula period.

Hel-575 LÓMATJÖRN 2070 ± 120
120 BC

Gyttja, 279-289 cm below surface.
Comment(YV): Lithostratigraphically overlying a liparitic tephra layer.

Hel-576 See HIETATIEVAT SERIES Hel-516

KUTTANEN SERIES, ENONTEKIÖ, FINLAND

68°24'N, 22°52'E
Samples of charcoal from forest fires.
Coll. and subm. 1973 by M. Seppälä.

Hel-577 KUT 1 5840 ± 180
3890 BC

Depth 75 cm.

Hel-578 KUT 4 650 ± 120
AD 1300

Depth 11-12 cm.

Hel-603 KUT 2 4280 ± 130
2330 BC

Depth 68 cm.

Hel-604 KUT 3 3570 ± 150
1620 BC

Depth 44 cm.

Hel-605 KUT 5 1290 ± 130
AD 660

Depth 120-123 cm.

Hel-579 - 580 See LOVOJÄRVI SERIES Hel-439

VÄISKÄNSUO SERIES, LAITILA, FINLAND

60°55'N, 21°42'E, 15 m a.s.l.
Coll. and subm. 1973 by K. Tolonen.
Ref. Tolonen and Ruuhijärvi (1976), Tolonen, Siiriäinen and Hirviluoto (1978).

Hel-581 LAIT III 1 2960 ± 140
1010 BC
Coarse detritus gyttja, 190-200 cm depth.
Comment(KT): Early zone IX. The date is about 500 years too old when compared with the date of isolation niveau of 200 cm (c. 2450 BP) estimated on the basis of the shore line chronology.

Hel-582 LAIT III 2A 2300 ± 120
350 BC
Coarse detritus gyttja, 165-171 cm depth.
Comment(KT): Zone IX. Stratigraphically consistent. Cultivation of cereals (Triticum and Hordeum types) begins at the level of 170 cm.

Hel-583 LAIT III 3 1190 ± 130
AD 760
Peat, 131-134 cm depth.
Comment(KT): Zone IX. Stratigraphically consistent. Spruce decline in connection with a probable slash and burn practice with rye cultivation during Late Iron Age.

Hel-584 LAIT III 4 930 ± 110
AD 1020
Peat, 100-104 cm depth.
Comment(KT): Zone IX. Stratigraphically consistent. From this level upwards the uninterrupted cultivation in the vicinity seems to have been permanent field cultivation (rye, wheat, corn, oat etc.).

Hel-585 LAIT III 5 390 ± 110
AD 1560
Peat, 45-47 cm depth.
Comment(KT): Zone IX. Stratigraphically consistent. Control date for the estimation of the growth rate of the peat strata.

NIEMISPÄÄ SERIES, LAITILA, FINLAND

60°54'N, 21°39'E, 13 m a.s.l.
Coll. and subm. 1973 by K. Tolonen.

Ref. Tolonen, Siiriäinen and Hirviluoto (1978).

Hel-586 LAIT IV 1 — 1910 ± 130 AD 40

Peat, 180-182 cm depth.

Comment(KT): Zone IX. Stratigraphically consistent and in good agreement with land uplift chronology. Initial phase of cultivation (Triticum type etc.) begins at this level.

Hel-587 LAIT IV 2 — 1020 ± 120 AD 930

Peat, 100-104 cm depth.

Comment(KT): Zone IX. Stratigraphically consistent. Increase in intensive ryedominated cultivation from 700 - 900 AD.

Hel-588 - 592 See HIETATIEVAT SERIES Hel-516

SKI-SAMPLE SERIES, FINLAND

Samples subm. by N. Valonen.

Hel-593 HÄMEENKYRÖ — 500 ± 120 AD 1450

MVKTE 7701

Hel-594 LOIMAA — 760 ± 120 AD 1190

MVKTE 3914

Hel-595 ALAVUS — 1710 ± 100 AD 240

KM 12114

Hel-596 LIPERI — 2370 ± 140 420 BC

MVKTE 3709

Hel-597 YLITORNIO — 400 ± 110 AD 1550

MVKTE 7357

Hel-598 PERTUNMAA — 1710 ± 140 AD 240

MVKTE 7857

Hel-599 - 600 See KILTERI SERIES Hel-475

SÄYNÄJÄLAMPI SERIES II, TEERISUO, KUUSAMO, NE FINLAND

66°10'N, 29°00'E, 270 m a.s.l.

Three samples from lower parts of sediment succession on the western shore of the little tarn of Säynäjälampi.

Coll. 1973 with Reissinger sampler and subm. 1974 by Y. Vasari.

Continuation of earlier studies regarding the age of the local Periglacial vegetation (Vasari 1963, Donner et al. 1971).

Hel-601 SÄYNÄJÄLAMPI II 1 — 11420 ± 300 / 9470 BC

Gyttja, 440-445 cm below mire surface.

Comment(YV): Beginning of purely organogenic sedimentation, pollen-analytically end of NAP maximum before Betula-alba maximum. Fairly close agreement with K-721 (11790 ± 110).

Hel-602 SÄYNÄJÄLAMPI II 2 — 11530 ± 310 / 9580 BC

Gyttja, 472-482 cm below mire surface.

Comment(YV): Stratigraphically organogenic layer underlying fine silt, pollen-analytically within Betula nana maximum. Practically the same age as that of the previous sample.

Hel-634 SÄYNÄJÄLAMPI II 3 — 9070 ± 200 / 7120 BC

Gyttja, 377-382 cm below mire surface.

Comment(YV): Pollen-analytically transition from Betula alba to Pinus maximum. The age agrees well with the present concept of the beginning of the pine dominated forests in the area (Vasari 1965) close to boundary between Preboreal and Boreal chronozones.

Hel-603 - 605 See KUTTANEN SERIES Hel-577

ENONTEKIÖ SERIES, FINLAND

Samples concerning a study of deflation in the Enontekiö area.

Coll. and subm. 1973 by M. Seppälä.

Hel-606 PASMAJÄRVI 1 — 2130 ± 130 / 180 BC

68°23'N, 24°18'E

Charcoal in sand, 226-230 cm depth.

Hel-607 PASMAJÄRVI 2 790 ± 130
AD 1160

Charcoal in sand, 220-222 cm depth.

Hel-608 PÖYRISJÄRVI 3750 ± 150
1800 BC

68°45'N, 23°50'E

Charcoal in sand, 95-98 cm depth.

Hel-609 VAATIMENSEISOMAPÄÄ, FINLAND 250 ± 120
AD 1700

Topogr. map no 3814, N 763310, E 48320/27°, about 360 m a.s.l.

Wood coll. and subm. 1974 by M. Eronen.

Comment(ME): Pine stump found in a pond, which was situated on a fjeld above the present pine forest limit, in northern Finnish Lapland.

Hel-610 KOARVIKODDS I, FINLAND 6550 ± 190
4600 BC

Topogr. map no 382306, N 766655, E 47785/27°, 332 m a.s.l.

Wood coll. and subm. 1974 by M. Eronen.

Comment(ME): Pine trunk found in a pond in the zone of isolated pine trees in northern Finnish Lapland.

Hel-611 KOARVIKODDS II 1410 ± 130
AD 540

Wood coll. and subm. 1974 by M. Eronen.

Comment(ME): Pine stump found in a pond in the zone of isolated pine trees in northern Finnish Lapland.

Hel-612 VESTOJOEN LOMPOLOT, FINLAND 4400 ± 160
2450 BC

Topogr. map no 382306, N 766505, E 47655/27°, 291 m a.s.l.

Wood coll. and subm. 1974 by M. Eronen.

Comment(ME): Pine trunk found in a small lake in the zone of isolated pine trees in northern Finnish Lapland.

Hel-613 SESTJOEN LOMPOLOT, FINLAND 1060 ± 120
AD 890

Topogr. map no 384203, N 769330, E 50825/27°, 218 m a.s.l.

Wood coll. and subm. 1974 by M. Eronen.

Comment(ME): Pine stump found in a pond in the zone of isolated pine trees in northern Finnish Lapland.

Hel-614 LITTEMUORVÄÄRIJÄVRIN LOMPOLOT 750 ± 120
AD 1200

Topogr. map no 382306, N 766805, E 47970/27°, 318 m a.s.l.
Wood coll. and subm. 1974 by M. Eronen.
Comment(ME): Pine stump found in a pond in the zone of isolated pine trees in northern Finnish Lapland.

Hel-615 SÄYTSJÄRVI II, FINLAND 4440 ± 130
2490 BC

Topogr. map no 384203, N 769610, E 50880/27°, 220 m a.s.l.
Wood coll. and subm. 1974 by M. Eronen.
Comment(ME): Pine trunk found in cutting made into a peat bog. Outer part of the pine tree limit zone in northern Finnish Lapland.

Hel-616 MUKKALOMPOLO I, FINLAND 5400 ± 170
3450 BC

Topogr. map no 382306, N 766685, E 47900/27°, 285 m a.s.l.
Wood coll. and subm. 1974 by M. Eronen.
Comment(ME): Pine stump found floating in a wet depression on a mire. Zone of isolated pine trees in northern Finnish Lapland.

VARANGER SERIES, NORWAY

Samples coll. 1974 by J. Donner (shell samples) and 1975 by M. Eronen (lakesediment samples).
General comment(JD): The shell dates were used to construct a curve for the Holocene land/sea level changes in the Varangerfjord area and the outer coast of the Varanger peninsula. The dates from the two lakes, Mordvatnet (Hel-655 - 656) and Vaervatnet (Hel-699 - 700), were used for comparisons with the shell dates.
(Donner, Eronen and Jungner 1977)

Hel-617 I/1, VESTRE JACOBSELV, VARANGERFJORD 3830 ± 110
1880 BC

70°07'00"N, 18°35'10"E
Arctica islandica, 1.0-1.5 m depth, 6.8 m above the Balanus line.

Hel-618 II/1, KARIEL, VARANGERFJORD 4190 ± 130
2240 BC

70°05'50"N, 18°40'40"E
Mya truncata, 0-50 cm depth, 11.9 m above the Balanus line.

Hel-619 II/2, KARIEL, VARANGERFJORD 3820 ± 130
1870 BC
70°05'55"N, 18°40'40"E
Arctica islandica, 0-50 cm depth, 11.9 m above the Balanus line.

Hel-620 III/1, KARIEL, VARANGERFJORD 4400 ± 130
2450 BC
70°06'10"N, 18°39'00"E
Mytilus edulis and Modiolus modiolus, 0-50 cm depth, 18.7 m above the Balanus line.

Hel-621 IV/1, KARIEL, VARANGERFJORD 3930 ± 130
1980 BC
70°06'15"N, 18°38'30"E $\delta^{13}C = +4.1‰$
Mytilus edulis and Modiolus modiolus, 0-50 cm depth, 15.4 m above the Balanus line.

Hel-622 IV/2, KARIEL, VARANGERFJORD 4300 ± 160
2350 BC
Arctica islandica, 0-50 cm depth, 15.4 m above the Balanus line.

Hel-623 V/1, KRAMPENES, VARANGERFJORD 3680 ± 140
1730 BC
70°06'20"N, 19°28'00"E
Mytilus edulis, 0-50 cm depth, 15.3 m above the Balanus line.

Hel-624 VI/1, MAKVIKEN, VARANGERFJORD 4120 ± 130
2170 BC
70°02'20"N, 18°24'20"E $\delta^{13}C = +1.7‰$
Mytilus edulis, 0-1 m depth, 15.8 m above the Balanus line.

Hel-625 VI/2, MAKVIKEN, VARANGERFJORD 6430 ± 150
4480 BC
Mya truncata, 0-1 m depth, 15.8 m above the Balanus line.

Hel-626 VII/1, MAKVIKEN, VARANGERFJORD 3190 ± 120
1240 BC
70°02'30"N, 18°23'40"E $\delta^{13}C = +4.6‰$
Arctica islandica, 0-1 m depth, 11.2 m above the Balanus line.

Hel-627 VIII/1, NYELVEN, VARANGERFJORD 5530 ± 150
3580 BC
70°04'05"N, 18°09'00"E
Mytilus edulis, 0-1 m depth, 23.8 m above the Balanus line.

Hel-628 VIII/2, NYELVEN, VARANGERFJORD 8120 ± 170
6170 BC

Mya truncata, 0-1 m depth, 23.8 m above the Balanus line.

Hel-655 MORDVATNET, NESSEBY, VARANGERFJORD 8780 ± 180
6830 BC

70°03'30"N, 18°15'30"E, 34 m a.s.l.

Silt-gyttja, 7.16-7.21 m depth (4.1 m water).

Comment(ME): Isolation of the lake basin from the Arctic Ocean. Isolation is clearly reflected in the change in the diatom flora.

Hel-656 MORDVATNET, NESSEBY, VARANGERFJORD 7510 ± 220
5560 BC

Gyttja, 6.80-6.85 m depth.

Comment(ME): Gyttja deposited in the lake some time after isolation of the lake basin from the Arctic Ocean.

Hel-699 VAERVATNET 1, NESSEBY, VARANGERFJORD 5360 ± 110
3410 BC

70°04'00"N, 18°09'40"E, 23 m a.s.l.

Gyttja, 4.19-4.25 m depth (1.70 m water).

Comment(ME): Gyttja deposited just after the isolation of the lake basin from the Arctic Ocean.

Hel-700 VAERVATNET 2, NESSEBY, VARANGERFJORD 5620 ± 190
3670 BC

Gyttja, 4.25-4.28 m depth.

Comment(ME): Isolation of the lake basin from the Arctic Ocean. Isolation is clearly reflected in the change in the diatom flora.

Hel-747 HAVNINGBERG 4300 ± 130
2350 BC

70°32'30"N, 19°53'30"E $\delta^{13}C = +2.2‰$

Mytilus edulis, 0-50 cm depth, 14.1 m above the Balanus line.

Hel-748 HAVNINGBERG 520 ± 90
AD 1430

70°32'30"N, 19°53'10"E

Mytilus edulis, 0-50 cm depth, 4.0 m above the Balanus line.

Hel-749 SANDEFJORD, BÅTSFJORD 4290 ± 120
2340 BC

70°30'40"N, 19°51'20"E $\delta^{13}C = +1.6‰$

Mytilus edulis, 0-100 cm depth, 12.4 m above the Balanus line.

Hel-750 STORE MOLVIK, BERLEVÅG 2850 ± 120
900 BC
70°47'25"N, 17°57'00"E $\delta^{13}C = +2.4‰$
Modiolus modiolus, 0-50 cm depth, 9.0 m above the Balanus line.

Hel-751 KJØLNESET, BERLEVÅG 3820 ± 130
1870 BC
70°51'05"N, 18°30'40"E $\delta^{13}C = +3.2‰$
Mytilus edulis, 0-100 cm depth, 11.4 m above the Balanus line.

Hel-752 SANDEFJORDSBUGTEN, BERLEVÅG 1340 ± 100
AD 610
70°47'50"N, 18°32'30"E
Mytilus edulis, 0-100 cm depth, 4.1 m above the Balanus line.

Hel-753 VEINES, BERLEVÅG 2850 ± 120
900 BC
70°43'30"N, 18°37'40"E $\delta^{13}C = +1.2‰$
Mytilus edulis, 0-50 cm depth, 8.5 m above the Balanus line.

Hel-754 KISTRANDNES, PORSANGER 3460 ± 120
1510 BC
70°27'50"N, 14°31'00"E $\delta^{13}C = +2.8‰$
Mytilus edulis, 0-50 cm depth, 10.9 m above the Balanus line.

Hel-755 MYRSET, PORSANGER 4520 ± 140
2570 BC
70°21'30"N, 14°23'30"E $\delta^{13}C = +2.1‰$
Modiolus modiolus, 0-50 cm depth.

Hel-629 - 630 · See KILTERI SERIES Hel-475

SÄRKIKANGAS SERIES, KUUSAMO, FINLAND

Peat samples coll. and subm. 1974 by S. Hicks.
Ref. Hicks (1975, 1976).

Hel-631 SÄRKIKANGAS I 810 ± 120
AD 1140
Depth 14-18 cm.
Comment(SH): If a constant rate of peat accumulation were predicted then a line drawn through Hel-633 and Hel-632 and extended to the surface would suggest that this date was too young. However (i) the very surface peat is less humified and has therefore accumulated more rapidly so that the overall rate of accumulation has not been constant (ii) pollen features at and above this level can be correlated with other diagrams

from the area where a similar age is given, (iii) Hel-633 may itself be a little bit too young (see comments) which in any case would then alter the accumulation curve.

Hel-632 SÄRKIKANGAS II 2970 ± 140
1020 BC

Depth 34-38 cm.
Comment(SH): Date used primarily in calculating the rate of peat accumulation.

Hel-633 SÄRKIKANGAS III 3970 ± 150
2020 BC

Depth 49-53 cm.
Comment(SH): There is some discrepancy between this date and Hel-321 (4980 ± 140) in that they both mark a horizon immediately before the rise of Picea in the pollen diagrams. The work of other authors suggests that the spread of spruce into eastern Finland took place closer to 5000 BP than to 4000 BP.

Hel-634 See SÄYNÄJÄLAMPI SERIES II Hel-601

Hel-635 See KILTERI SERIES Hel-476

Hel-636 LITTEMUOROAIVI III, FINLAND 4520 ± 130
2570 BC

Topogr. map no 382309, N 766570, E 48190/27°, about 310 m a.s.l.
Wood coll. and subm. 1974 by M. Eronen.
Comment(ME): Pine trunk found in a pond in the zone of isolated pine trees in northern Finnish Lapland.

Hel-637 SAMMUTTIVAARA I, FINLAND 910 ± 100
AD 1040

Topogr. map no 384209, N 769460, E 52025/27°, about 210 m a.s.l.
Wood coll. and subm. 1974 by M. Eronen.
Comment(ME): Pine stump found in a pond in the zone of isolated pine in northern Finnish Lapland.

Hel-638 VARJJAQASNJARGA V, FINLAND 5740 ± 140
3790 BC

Topogr. map no 393107, N 770255, E 52630/27°, 198 m a.s.l.
Wood coll. and subm. 1974 by M. Eronen.
Comment(ME): Pine trunk found in a pond in the pine tree limit zone in northern Finnish Lapland.

Hel-639 KUTULAHTI II, FINLAND 830 ± 100
AD 1120

Topogr. map no 393107, N 770045, E 52570/27°, 207 m a.s.l.
Wood coll. and subm. 1974 by M. Eronen.
Comment(ME): Pine trunk found in a pond in the pine tree limit zone in northern Finnish Lapland.

Hel-640 KUTULAHTI III, FINLAND 1250 ± 100
AD 700

Topogr. map no 393107, N 770055, E 52580/27°, 207 m a.s.l.
Wood coll. and subm. 1974 by M. Eronen.
Comment(ME): Pine trunk found in a pond in the pine tree limit zone in northern Finnish Lapland.

Hel-641 VARJJAQASNJARGA VI, FINLAND 3620 ± 130
1670 BC

Topogr. map no 393107, N 770255, E 52630/27°, 198 m a.s.l.
Wood coll. and subm. 1974 by M. Eronen.
Comment(ME): Pine trunk found in a pond in the pine tree limit zone in northern Finnish Lapland.

Hel-642 IIJÄRVI VI, FINLAND 2560 ± 130
610 BC

Topogr. map no 393107, N 770030, E 52475/27°, 197 m a.s.l.
Wood coll. and subm. 1974 by M. Eronen.
Comment(ME): Pine trunk found in a pond in the pine tree limit zone in northern Finnish Lapland.

Hel-643 HÖGHOLMEN, HIITTINEN, FINLAND 650 ± 120
AD 1300

Wood from a pier construction.
Subm. 1974 by T. Edgren.

Hel-644 - 645 See KILTERI SERIES Hel-475

Hel-646 RANTAKYLÄ, JOENSUU, FINLAND 6220 ± 200
4270 BC

Peat sample taken from a 5 cm thick peat layer under sand at a depth of 60 cm.
Coll. and subm. 1974 by H. Mansikkaniemi. (Mansikkaniemi 1975)
For comparison see Alhonen (1967).

Hel-647 SAMMALSUO, LAITILA, FINLAND 5030 ± 200
3080 BC

(674407, 54662), 48 m a.s.l.
Coarse detritus gyttja, 135 cm depth.
Coll. and subm. 1971 by G. Glückert.
Comment(GG): Isolation of the basin from the Litorina Sea corresponding to the shoreline L II in SW Finland.
(Glückert 1976)

Hel-648 SAMMALSUO 2940 ± 130
990 BC

Peat, 70 cm depth.
Coll. and subm. 1974 by G. Glückert.
Comment(GG): Immigration of Picea in Laitila.

Hel-649 TRÄSKMOSSEN, TENHOLA, FINLAND 4990 ± 180
3040 BC

(66474, 44682), 44 m a.s.l.
Peat, 430 cm depth.
Coll. and subm. 1974 by G. Glückert.
Comment(GG): Remanent of wood in Carex peat. See also Hel-654 and 669.
(Glückert 1976)

Hel-650 ISO VUOHENSUO, YLÄNE, FINLAND 2870 ± 180
920 BC

(674562, 57747), 92 m a.s.l.
Peat, 285 cm depth.
Coll. and subm. 1974 by G. Glückert.
Comment(GG): Immigration of Picea in Yläne.
(Glückert 1976)

Hel-651 ISO VUOHENSUO 6970 ± 220
5020 BC

Gyttja and wood, 419-423 cm depth.
Comment(GG): Zone boundary V/VI, showing a too low age for the zone boundary.

Hel-652 ISO VUOHENSUO 8050 ± 250
6100 BC

Clayey gyttja, 430-435 cm depth.
Comment(GG): Isolation of the basin from the Ancylus Lake corresponding to the shoreline A III in SW Finland.
(Glückert 1976)

Hel-653 KUIVASTON ISOSUO, TENHOLA, FINLAND 3350 ± 170
1400 BC

(666390, 44722), 48 m a.s.l.
Peat, 265 cm depth.
Comment(GG): Immigration of Picea in Tenhola.
(Glückert 1976)

Hel-654 TRÄSKMOSSEN, TENHOLA, FINLAND 3210 ± 150
1260 BC

(666474, 44682), 44 m a.s.l.
Peat, 335 cm depth.
Coll. and subm. 1974 by G. Glückert.
Comment(GG): Immigration of Picea in Tenhola. See also Hel-649 and 669.
(Glückert 1976)

Hel-655 - 656 See VARANGER SERIES Hel-617

Hel-657 SLÄTMOSSEN, KEMIÖ, FINLAND 3230 ± 170
1280 BC

(667502, 42384), 40 m a.s.l.
Peat, 270-275 cm depth.
Coll. and subm. 1974 by G. Glückert.
Comment(GG): Immigration of Picea in Kemiö.
(Glückert 1976)

Hel-658 SLÄTMOSSEN 5490 ± 180
3540 BC

Gyttja, 440-445 cm depth.

Hel-659 KETLAHTI, HEINOLA, FINLAND 3600 ± 175
1650 BC

Wood from a sleigh runner, bog find, KM 12146.
Coll. and subm. 1974 by A. Siiriäinen.
Comment(AS): The sleigh runner has a bear-head sculpture as ornamentation. It has been dated by pollen evidence (Picea) to the period of typical combed pottery (c. 3000 BC) and thus the radiocarbon result is surprisingly late.
(Carpelan 1974)

HANGASSUO SERIES, ANJALANKOSKI, FINLAND

60°47'N, 26°55'E, 47 m a.s.l.
Coll. and subm. 1974 by M. Eronen.
Ref. Eronen (1976).

Hel-660 HANGASSUO 8870 ± 170
6920 BC

Gyttja, 5.60-5.65 m depth.
Comment (ME): The end of Ancylus transgression in the area.

Hel-661 HANGASSUO 9280 ± 190
7330 BC

Gyttja, 5.90-5.95 m depth.
Comment (ME): Onset of Ancylus transgression in the stratigraphy of the site.

Hel-662 HANGASSUO 9530 ± 200
7580 BC

Peat, 5.96-6.00 m depth.
Comment (ME): Upper part of regression peat, which has been formed after Yoldia regression and before Ancylus transgression.

Hel-663 HANGASSUO 9510 ± 200
7560 BC

Peat, 6.06-6.11 m depth.
Comment (ME): Lower part of regression peat, which has been formed after Yoldia regression and before Ancylus transgression.

Hel-664 HANGASSUO 8780 ± 160
6830 BC

Peat, 5.54-5.58 m depth.
Comment (ME): Lower surface of peat deposit, which has been formed after Ancylus transgression.

Hel-665 HANGASSUO 8360 ± 190
6410 BC

Peat, 4.87-4.93 m depth.
Comment (ME): Beginning of the Alnus curve in pollen stratigraphy.

Hel-666 HANGASSUO 7810 ± 180
5860 BC

Peat, 4.67-4.73 m depth.
Comment (ME): The spread of Alnus in the pollen stratigraphy.

Hel-667 NUUPPAANSUO, RANUA, FINLAND 7580 ± 260
5630 BC

65°58'N, 26°22'E
Peat, 150-160 cm depth.
Coll. and subm. 1974 by G. Söderman.
Comment: Transition between Birch-Alder and Pine-Alder subzone of LPAZ Pine-Birch.

Hel-668 LAMMINJÄRVI, KYYJÄRVI, FINLAND 5520 ± 150
3570 BC

63°02'N, 24°18'E

Peat, 160-180 cm depth.

Coll. and subm. 1974 by G. Söderman.

Comment: Middle of Birch-Alder subzone of LPAZ Birch-Alder-Hazel-Elm.

Hel-669 TRÄSKMOSSEN, TENHOLA, FINLAND 6280 ± 200
4330 BC

(66474, 44682), 44 m a.s.l.

Gyttja, 480 cm depth.

Coll. and subm. 1974 by G. Glückert.

Comment(GG): Isolation of the basin from the Litorina Sea during the regression from shore-level L I to L II in SW Finland. See also Hel-649, 654. (Glückert 1976)

Hel-670 GRABBEN KANAVA, KARJAA, FINLAND 660 ± 100
AD 1290

Top soil (turf), which was buried by the material dug from the canal.

Coll. and subm. 1974 by C. Carpelan and M. Nunez.

Comment: The date shows that the channel was dug during the Middle Ages.

Hel-671 GRABBEN KANAVA, KARJAA, FINLAND 790 ± 80
AD 1160

Sample taken from a darker lens within the buried turf.

Hel-672 TODISTON NEVA, ISOJOKI, FINLAND 5640 ± 150
3690 BC

Wood coll. 1915 by A. Todisto and subm. 1974 by A. Forstén and S. Lahti.

For ref. see Forstén and Lahti (1976).

Hel- 673 LEVÄSUO, PIELAVESI, FINLAND 14590 ± 310
12640 BC

Wood coll. 1903 by W. Huuskonen and subm. 1974 by A. Forstén and S. Lahti.

For ref. see Forstén and Lahti (1976).

JÄRVENPÄÄNSUO SERIES, UTAJÄRVI, FINLAND

64°50'N, 26°40'E, 102-105 m a.s.l.

Samples from various levels of a peat monolith taken from a raised bog to the south of Sanginjärvi.

Coll. 1972 (digging) by K. Holappa and subm. 1975 by K. Holappa and Y. Vasari.

Hel-675 JÄRVENPÄÄNSUO I 330 ± 80
AD 1620
Eriophorum/wood-Sphagnum peat, 72.5-77.5 cm below surface.
Comment(YV): Inconsistent with the pollen-stratigraphical age, boundary between Subboreal and Subatlantic chronozones.

Hel-676 JÄRVENPÄÄNSUO II 3760 ± 125
1810 BC
Carex-Sphagnum peat, 115-120 cm below surface.
Comment(YV): Expansion of Picea.

Hel-677 JÄRVENPÄÄNSUO III 4480 ± 120
2530 BC
Carex-Sphagnum peat, 137.5-142.5 cm below surface.
Comment(YV): Rational limit of Picea pollen.

Hel-678 JÄRVENPÄÄNSUO IV 6890 ± 150
4940 BC
Wood-Carex peat, 245-250 cm below surface.
Comment(YV): Empirical limit of Tilia pollen.

Hel-679 JÄRVENPÄÄNSUO V 7330 ± 150
5380 BC
Lower boundary of Carex peat towards clay, 288-293 cm below surface.
Comment(YV): Beginning of peat growth following the retreat of the Litorina Sea from the site.

SOTKASUO SERIES, UTAJÄRVI, FINLAND

64°50'N, 26°15'E

Coll. and subm. 1974 by C. Reynaud and M. Hjelmroos.

Hel-680 5610 ± 150
3660 BC
Peat, 130-135 cm depth.
Comment(CR): First Human impact. Biozone limit between Alnus-Betula and Pinus-Betula.

Hel-722 3320 ± 180
1370 BC
Peat, 89-94 cm depth.
Comment(CR): Spruce immigration.

Hel-723 — 2720 ± 170 (770 BC)

Peat, 75-80 cm depth.

Comment(CR): Spruce maximum.

Hel-724 — 5090 ± 170 (3140 BC)

Peat, 114-119 cm depth.

Comment(CR): Second Human impact.

Hel-681 SANDFJORD, VARANGER PENINSULA — 440 ± 100 (AD 1510)

70°30'N, 30°34'E, c. 7 m a.s.l.

Dryas heath humus under a 2-3 m thick dune sand layer.

Coll. and subm. 1974 by S. Eurola.

See also Hel-685.

Hel-682 - 684 See LOVOJÄRVI SERIES Hel-439

Hel-685 SANDFJORD, VARANGER PENINSULA — 980 ± 100 (AD 970)

70°30'N, 30°34'E

Mollusk shells (Mytilus edulis) from the strand plateau, c. 2-3 m a.s.l.

Coll. and subm. 1974 by S. Eurola.

Comment(SE): The dunes were formed on the beach terrace. The development from the primary dune to the heath dune (cf. Hel-681) took c. 500 years after which it was eroded and followed by the formation of a new white dune.

PALSA SERIES, ENONTEKIÖ, FINLAND

Samples coll. and subm. 1974 by M. Seppälä.

See also Piesjärvi series Hel-294.

Hel-686 MUNNIKURKKIO 1 — 8700 ± 280 (6750 BC)

68°57'30"N, 22°09'E

Peat and silt, 55 cm depth.

Hel-687 MUNNIKURKKIO 2 — 7740 ± 260 (5790 BC)

Peat, 30 cm depth.

Hel-688 PALS-1, SE of MUNNIKURKKIO — 8730 ± 170 (6780 BC)

68°57'20"N, 22°11'E

Peat, 120 cm depth.

Hel-689 PALS-2, SE of MUNNIKURKKIO — 8940 ± 190 / 6990 BC

Wood, 120 cm depth.

Hel-690 PALS-3, SE of MUNNIKURKKIO — 5880 ± 200 / 3930 BC

Peat, 50 cm depth.

Hel-691 PALS-4, SE of MUNNIKURKKIO — 2720 ± 120 / 770 BC

Peat, 10 cm depth.

Hel-692 KALATONJÄRVI 1 — 7440 ± 160 / 5490 BC

68°50'N, 22°15'E

Peat and wood, 90 cm depth.

Hel-693 KALATONJÄRVI 2 — 7770 ± 170 / 5820 BC

Peat, 90 cm depth.

Hel-694 KALATONJÄRVI 3 — 6150 ± 200 / 4200 BC

Peat, 60 cm depth.

KITEENJÄRVI SERIES, KITEE, FINLAND

62°06'N, 30°10'E

Coll. 1974 by J. Vuorinen and P. Huttunen. Subm. 1974 by J. Vuorinen.

Hel-695 KIT 1 A, B — 1930 ± 160 / AD 20

Coarse detritus gyttja, 22-28 cm depth.

Hel-696 KIT 2 A, B — 2370 ± 170 / 420 BC

Coarse detritus gyttja, 70-75 cm depth.

Hel-697 KIT 3 A, B — recent

Coarse detritus gyttja, 150-156 cm depth.

Hel-698 KIT 4 A, B — 4620 ± 190 / 2670 BC

Coarse detritus gyttja, 173-180 cm depth.

Hel-699 - 700 See VARANGER SERIES Hel-617

HYYPIÖJÄRVI SERIES, KITEE, FINLAND

62°05'N, 30°10'E

Coll. 1974 by J. Vuorinen, P. Huttunen and J. Meriläinen.

Subm. 1974 by J. Vuorinen.

Hel-701 HYY 1 A, B — 2210 ± 150 / 260 BC

Gyttja, 37-42 cm depth.

Hel-702 HYY 2 A, B — 3230 ± 130 / 1280 BC

Gyttja, 71-76 cm depth.

Hel-703 HYY 3 A, B — 4290 ± 190 / 2340 BC

Gyttja, 166-174 cm depth.

Hel-704 HYY 4 A, B — 4540 ± 200 / 2590 BC

Gyttja, 306-314 cm depth.

LINTUNEMOSSEN SERIES, VÖYRI, FINLAND

63°07'30"N, 22°10'E, 17.5 m a.s.l.

Samples coll. 1973 by K. Tolonen and A. Siiriäinen. Subm. by K. Tolonen.

Ref. Tolonen, Siiriäinen and Hirviluoto (1978).

Hel-705 LINTU 3 — 750 ± 100 / AD 1200

Peat, 60-63 cm depth.

Comment(KT): Zone IX. Stratigraphically consistent. Permanent and uninterrupted settlement begun in the vicinity according to pollen analysis about 1000 - 1200 AD.

Hel-706 LINTU 2 — 1020 ± 130 / AD 930

Peat, 122-124 cm depth.

Comment(KT): Discarded as about 500 years too young when compared with Hel-705 and Su-434 (990 ± 90) from the same monolith and with the date of the isolation niveau of 160 cm (1800 BP).

PERÄPOHJOLA SERIES, FINLAND

Samples coll. 1975 and 1976 by M. Saarnisto, H. Hyvärinen and M. Eronen using a piston corer.

General comment(MS): The following dates on mud (gyttja) from small lake basins in the area north of Gulf of Bothnia provide data on deglaciation history, emergence of the area from the Baltic basin waters, and pollen stratigraphy. Samples are composites from equivalent stratigraphical levels in 2 or more replicate cores.

Hel-707 VALKIAJÄRVI I, PELLO — 8680 ± 190 / 6730 BC

66°48'N, 24°06'E

Mud, 530-536 cm depth.

Comment(MS): Upper part of local Birch pollen zone.

Hel-708 VALKIAJÄRVI II, PELLO — 8770 ± 210 / 6820 BC

Mud, 546-552 cm depth.

Comment(MS): For control of Hel-709. Birch pollen zone.

Hel-709 VALKIAJÄRVI III, PELLO — 9260 ± 220 / 7310 BC

Gyttja, 552-558 cm depth.

Comment(MS): Emergence (isolation) of Lake Valkiajärvi from Baltic basin waters. Minimum date for deglaciation. Birch pollen zone.

Hel-714 ALEMPI SILMÄSLAMPI I, ROVANIEMI MLK — 8270 ± 220 / 6320 BC

66°39'N, 25°58'E

Mud, 414-420 cm depth.

Comment(MS): For control of Hel-715. End of Birch pollen zone. Rise of alder pollen curve.

Hel-715 ALEMPI SILMÄSLAMPI II, ROVANIEMI MLK — 8780 ± 160 / 6830 BC

Mud, 420-426 cm depth.

Comment(MS): Emergence (isolation) of Lake Alempi Silmäslampi from Baltic basin waters. Birch pollen zone.

Hel-716 PURASJÄRVI I, PELLO — 8530 ± 180 / 6580 BC

66°52'N, 24°35'E

Mud, 467-473 cm depth.

Comment(MS): For control of Hel-717. Birch pollen zone.

Hel-717 PURASJÄRVI II, PELLO 8650 ± 180
6700 BC

Mud, 473-479 cm depth.

Comment (MS): Isolation (emergence) of Lake Purasjärvi from Baltic basin waters. Birch pollen zone.

VARASLAMPI SERIES, JOENSUU, FINLAND

62°36'N, 29°47'E

Samples coll. 1975 by J. Vuorinen and K. Tolonen. Subm. by J. Vuorinen.

Hel-710 VAR 1 A, B 640 ± 140
AD 1310

Mud, 501-506 cm depth.

Hel-711 VAR 2 A, B 1660 ± 150
AD 290

Mud, 548-553 cm depth.

Hel-712 VAR 3 2490 ± 130
540 BC

Mud, 582-587 cm depth.

Hel-713 VAR 4 A, B 6300 ± 150
4350 BC

Peat, 660-670 cm depth.

Hel-714 - 717 See PERÄPOHJOLA SERIES Hel-707

LOCH OF PARK SERIES II, ABERDEENSHIRE, SCOTLAND

57°30'N, 02°22'W, surface alt 70 m

Samples from various levels of a monolith dug from the scrub to the west of the lake.

Coll. and subm. 1972 by Y. Vasari.

Hel-718 LOCH OF PARK 6020 ± 140
4070 BC

Coarse gyttja, 67-71 cm below surface.

Comment (YV): Reasonable date for the expansion of alder (somewhat before the Mitchell-BAT).

Hel-741 LOCH OF PARK 3130 ± 120
1180 BC

Boundary coarse gyttja/wood peat, 51-53 cm below surface.

Comment (YV): First signs of human influence upon vegetation.

Hel-742 LOCH OF PARK 3740 ± 130
1790 BC

Coarse gyttja, 27-29 cm below surface.
Comment(YV): Short-lived AP maximum within the period of human occupation. Inconsistent with other dates (disturbance of sediments?).

Hel-743 LOCH OF PARK 3010 ± 120
1060 BC

Boundary wood peat/gyttja, 23-25 cm below surface.
Comment(YV): Increasing human influence.

PÄRKÖNSUO SERIES, LAITILA, FINLAND

60°51'N, 21°40'E, 12.5 m a.s.l.
Samples coll. 1973 by K. Tolonen and J. Vuorinen. Subm. by K. Tolonen.
Ref. Tolonen, Siiriäinen and Hirviluoto (1978).

Hel-719 LAIT IX 2 1140 ± 100
AD 810

Peat, 125-128 cm depth.
Comment(KT): Zone IX. Stratigraphically consistent. Beginning of intensive slash and burn cultivation with rye in the vicinity. Compare also Su-437 (2310 ± 50 BP, depth 1.90-2.00 m).

Hel-720 LAIT IX 3 740 ± 100
AD 1210

Peat, 80-85 cm depth.
Comment(KT): Zone IX. Stratigraphically consistent. It seems that an intensive slash and burn cultivation was practiced in the vicinity until about 1500 AD.

NEITTESSUO SERIES I, VAHTO, FINLAND

(672670, 57214), 60 m a.s.l.
Coll. and subm. 1975 by G. Glückert.
Ref. Glückert (1976, 1977).

Hel-721 NEITTESSUO I 3310 ± 120
1360 BC

Peat, 130 cm depth.
Comment(GG): Immigration of Picea in Vahto.

Hel-727 NEITTESSUO II 7100 ± 240
5150 BC

Gyttja, 215 cm depth.
Comment(GG): Isolation of the basin from the Baltic at the end of

the Ancylus Lake-stage.

Hel-722 - 724 See SOTKASUO SERIES Hel-680

SANDBRINKSMOSSEN SERIES, DRAGSFJÄRD, FINLAND

(66324, 57952), 47 m a.s.l.
Coll. and subm. 1975 by G. Glückert. Ref. Glückert (1976).

Hel-725 SANDBRINKSMOSSEN 1 2250 ± 110
300 BC

Peat, 70 cm depth.
Comment(GG): Zone boundary VIII/IX.

Hel-726 SANDBRINKSMOSSEN 2 7150 ± 170
5200 BC

Gyttja, 225 cm depth.
Comment(GG): Isolation of the basin from the Baltic at the end of Ancylus Lake-stage.

Hel-727 See NEITTESSUO SERIES I Hel-721

MUURASSUO SERIES, YLÄNE, FINLAND

(676316, 57706), 68 m a.s.l.
Coll. and subm. 1975 by G. Glückert. Ref. Glückert (1976).

Hel-728 MUURASSUO 1 2920 ± 170
970 BC

Peat, 110 cm depth.
Comment(GG): Immigration of Picea in Yläne.

Hel-729 MUURASSUO 2 7450 ± 230
5500 BC

Gyttja and claeye gyttja, 245 cm depth.
Comment(GG): Isolation of the basin from the Ancylus Lake corresponding to the shoreline A V in SW Finland.

Hel-730 MELTOLANSUO, PAIMIO, FINLAND 8110 ± 170
6160 BC

(669987, 42805), 67 m a.s.l.
Coll. and subm. 1975 by G. Glückert.
Gyttja, 165 cm depth.
Comment(GG): Zone boundary V/VI. Isolation of the basin from the Ancylus Lake corresponding to the shoreline A IV in SW Finland.

Hel-731 KALAISTENMÄENSUO, SAUVO, FINLAND 2490 ± 150
540 BC

(669618, 43185), 47 m a.s.l.
Gyttja, 125 cm depth.
Coll. and subm. 1975 by G. Glückert.
Comment(GG): Isolation of the basin from the Litorina Sea. This age is too low because of a hiatus in the sample series.

Hel-732 KOVALANSUO, PAIMIO, FINLAND 3620 ± 180
1670 BC

(670150, 43056), 51 m a.s.l.
Claeye gyttja, 75-80 cm depth.
Coll. and subm. 1975 by G. Glückert.
Comment(GG): Isolation of the basin from the Litorina Sea. This age is too low because of a hiatus in the sample series.

Hel-733 REHTISUO, NOUSIAINEN, FINLAND 3740 ± 180
1790 BC

(672212, 56869), 47 m a.s.l.
Gyttja-clay, 488-496 cm depth.
Coll. and subm. 1975 by G. Glückert.
Comment(GG): Isolation of the basin from the Litorina Sea. This age is too low because of a hiatus in the sample series.

Hel-734 UHLUSSUO, NOUSIAINEN, FINLAND 3570 ± 180
1620 BC

(672954, 56448), 52 m a.s.l.
Gyttja and sand, 387-394 cm depth.
Coll. and subm. 1975 by G. Glückert.
Comment(GG): Isolation of the basin from the Litorina Sea. This age is too low because of a hiatus in the sample series.

STORMOSSEN SERIES, KEMIÖ, FINLAND

(666530, 43200), 24 m a.s.l.
Coll. and subm. 1975 by G. Glückert.
Ref. Glückert (1976).

Hel-735 STORMOSSEN 1 3020 ± 120
1070 BC

Peat, 355-361 cm depth.
Comment(GG): Immigration of Picea in Kemiö.

Hel-736 STORMOSSEN 2 4130 ± 190
2180 BC

Gyttja, 422-428 cm depth.

Comment(GG): Isolation of the basin from the Litorina Sea corresponding to the shoreline L IV in SW Finland.

Hel-741 See LOCH OF PARK SERIES II Hel-718

Hel-744 - 745 See SONKAJA SERIES Hel-73

Hel-746 HORSLÖK, PERNÅ, FINLAND 4170 ± 130
2220 BC

Shellgravel

Coll. and subm. by O. Granö.

Hel-747 - 755 See VARANGER SERIES Hel-617

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Hel-242	Varislampi, Kuhmo	
Hel-497 - 501	Bruvatnet, Varangerbotn, Norway	
Hel-521 - 525	Akuvaara, Inari	
Hel-540 - 544	Suovalampi, Inari	
Hel-744 - 745	Sonkaja, Ilomantsi	

ILVONEN, E

Hel-147	Savukoski, Sokli	
Hel-348 - 349	Savukoski, Sokli	
Hel-569	Ulvila	& Kauhanen

JAUHIAINEN, E

Hel-132 - 133	Huononahonvuori, Kuhmoinen	
Hel-219	Peltovuoma, Nunnanen	
Hel-447 - 449	Borris Hede, Denmark	

JUNGNER, H

Hel-134 - 136	Säynäjälampi, Kuusamo	& Donner & Vasari
Hel-266	Aura kk	& Donner
Hel-281	Rautio	& Donner

Hel-282	Alavieska	& Donner
Hel-288	Aura kk	& Donner

KALLIO, P

Hel-84	Skierrifälis, Utsjoki	

KAUHANEN, I

Hel-569	Ulvila	& Ilvonen

KEJONEN, A

Hel-404 - 405	Muotkatunturi
Hel-536 - 539	Muotkatunturit
Hel-566 - 568	Muotkatunturit

LAHTI, S

Hel-672	Todiston neva, Isojoki	& Forstén
Hel-673	Leväsuo, Pielavesi	& Forstén

LEINO, J

Hel-375	Nairassuo, Kisko
Hel-376	Rapasuo, Perniö
Hel-377 - 378	Lapinsuo, Kiikala

MANSIKKANIEMI, H

Hel-646	Rantakylä, Joensuu

MERILÄINEN, J

Hel-194 - 196	Valkiajärvi, Ruovesi	
Hel-232 - 238	Hakojärvi, Evo	& Tolonen
Hel-283 - 284	Hakojärvi, Evo	& Tolonen
Hel-301 - 302	Hakojärvi, Evo	& Tolonen
Hel-324 - 325	Hakojärvi, Evo	& Tolonen
Hel-333 - 334	Hakojärvi, Evo	& Tolonen
Hel-478 - 482	Gallträsk, Kauniainen	& Tolonen

OHLSON, B

Hel-200	Degermossa, Brandö, The Aaland Islands

RELANDER, R

Hel-150 - 151	Konijärvi, Mikkelin mlk	& Ruuhijärvi
Hel-152 - 153	Pyhäpohja, Juva	& Ruuhijärvi

REYNAUD, C

Hel-407	Karijärvi	
Hel-408 - 410	Laihalampi	
Hel-411	Listimä- Suuas	
Hel-463	Tervola, Taivalkoski	& Tobolski
Hel-466	Listimä-Suuas	
Hel-680	Sotkasuo, Utajärvi	& Hjelmroos
Hel-722 - 724	Sotkasuo, Utajärvi	& Hjelmroos

RUUHIJÄRVI, R

Hel-15 - 16	Djupvik, Lyngen, Norway
Hel-17	Brumyre, Varangerbotten, Norway
Hel-18	Henrikvik, Kvalöy, Troms, Norway
Hel-25	Henrikvik, Kvalöy, Troms, Norway

Hel-49	Konnunsuo, Joutseno	
Hel-50 - 51	Haukkasuo, Valkeala	
Hel-52 - 53	Piilonsuo, Janakkala	
Hel-58 - 61	Nälköönsuo, Lohja	
Hel-150 - 151	Konijärvi, Mikkelin mlk	& Relander
Hel-152 - 153	Pyhäpohja, Juva	& Relander
Hel-201 - 208	Untula, Lammi kk	

SAARNISTO, M

Hel-8	Linnansuo, Imatra
Hel-9	Varpaislampi, Ristiina
Hel-10	Immolanlampi, Joroinen
Hel-13	Heimojärvi, Joutseno
Hel-21	Kivisuo, Pielavesi
Hel-22	Tanulampi, Rantasalmi
Hel-27	Sarkalahti, Leppävirta
Hel-34	Tanulampi, Rantasalmi
Hel-35	Heimojärvi, Joutseno
Hel-106	Lahnalampi, Asikkala
Hel-107 - 108	Salmenlampi, Sysmä
Hel-109 - 111	Särkijärvi, Sysmä
Hel-112	Salmenlampi, Sysmä
Hel-113	Lahnalampi, Asikkala
Hel-137	Säynätlampi, Heinola
Hel-220 - 221	Lutto, Sodankylä
Hel-396 - 401	The Eastern Lake Superior Region, Canada
Hel-402	The Jock Lake, Canada
Hel-464 - 465	The Eastern Lake Superior Region, Canada
Hel-467 - 474	The Jock Lake, Canada
Hel-476 - 477	The Eastern Lake Superior Region, Canada
Hel-707 - 709	Valkiajärvi, Pello
Hel-714 - 715	Alempi Silmäslampi, Rovaniemen mlk
Hel-716 - 717	Purasjärvi, Pello

SALMI, M

Hel-69	Markkina-aapa palsa, Enontekiö
Hel-70	Akshujärvi palsa, Inari
Hel-71	Syysjärvi, Inari
Hel-72	Markkina-aapa palsa, Inari
Hel-92 - 94	Syysjärvi, Inari
Hel-138 - 141	Akshujärvi palsa, Inari
Hel-142	Syysjärvi, Inari
Hel-212	Syysjärvi, Inari
Hel-379	Tununuk Pingo, Canada
Hel-380 - 382	Sompiojärvi, Sodankylä

SEPPÄLÄ, M

Hel-31	Kiellajoki, Inari
Hel-33	Kiellajoki, Inari
Hel-74	Kärsämäki, Turku
Hel-119	Petsimjärvi, Inari
Hel-120	Kiellajoki, Inari
Hel-121	Suttisjoki, Inari
Hel-144	Ruohttir fell, Kevo
Hel-145	Isosuo, Rusko
Hel-230 - 231	4th of July Creek Valley, Canada
Hel-294 - 297	Piesjärvi, Utsjoki
Hel-298	Iijärvi, Inari
Hel-299	Koddigvaara, Utsjoki
Hel-516 - 517	Hietatievat, Enontekiö
Hel-545 - 546	Hietatievat, Enontekiö
Hel-576	Hietatievat, Enontekiö
Hel-577 - 578	Kuttanen, Enontekiö
Hel-588 - 592	Hietatievat, Enontekiö
Hel-603 - 605	Kuttanen, Enontekiö
Hel-606 - 607	Pasmajärvi, Enontekiö
Hel-608	Pöyrisjärvi, Enontekiö
Hel-686 - 691	Munnikurkkio, Enontekiö
Hel-692 - 694	Kalatonjärvi, Enontekiö

SIIVONEN, L

Hel-254	Tornio	

SYRILÄ, S

Hel-372	Akujoki	
Hel-373	Erdigvaara	
Hel-374	Niljoki	

SÖDERMAN, G

Hel-667	Nuuppaansuo, Ranua	
Hel-668	Lamminjärvi, Kyyjärvi	

TIKKANEN, R

Hel-335 - 339	Loch Kinord, Scotland	& Vasari
Hel-718	Loch of Park, Scotland	& Vasari
Hel-741 - 743	Loch of Park, Scotland	& Vasari

TOBOLSKI, K

Hel-463	Tervola, Taivalkoski	& Reynaud

TOLONEN, K

Hel-50 - 51	Haukkasuo, Valkeala
Hel-58 - 61	Nälköönsuo, Lohja
Hel-64 - 67	Munasuo, Pyhtää
Hel-95 - 96	Haukkasuo, Valkeala
Hel-101	Nälköönsuo, Lohja
Hel-102	Varrassuo, Hollola
Hel-103 - 104	Nälköönsuo, Lohja
Hel-114 - 116	Punassuo, Perniö

Hel-117 - 118	Haukkasuo, Valkeala	
Hel-232 - 238	Hakojärvi, Evo	& Meriläinen
Hel-255 - 265	Pappilanlampi, Pielisjärvi	& Vuorinen
Hel-283 - 284	Hakojärvi, Evo	& Meriläinen
Hel-301 - 302	Hakojärvi, Evo	& Meriläinen
Hel-323	Pappilanlampi, Pielisjärvi	& Vuorinen
Hel-324 - 325	Hakojärvi, Evo	& Meriläinen
Hel-333 - 334	Hakojärvi, Evo	& Meriläinen
Hel-439 - 446	Lovojärvi, Lammi	& Huttunen
Hel-456 - 460	Lovojärvi, Espoo/Kirkkonummi	
Hel-461 - 462	Lappträsk, Kirkkonummi	
Hel-478 - 482	Gallträsk, Kauniainen	& Meriläinen
Hel-491	Lovojärvi, Lammi	& Huttunen
Hel-579 - 580	Lovojärvi, Lammi	& Huttunen
Hel-581 - 585	Väiskänsuo, Laitila	
Hel-586 - 587	Niemispää, Laitila	
Hel-682 - 684	Lovojärvi, Lammi	& Huttunen
Hel-705 - 706	Lintunemossen, Vöyri	
Hel-719 - 720	Pärkönsuo, Laitila	

VASARI, A

Hel-159	Hafratjörn, Iceland	& Y. Vasari

VASARI, Y

Hel-62	Maanselänsuo, Kuusamo	
Hel-134 - 136	Säynäjälampi, Kuusamo	& Donner & Jungner
Hel-146	Hafratjörn, Iceland	
Hel-159	Hafratjörn, Iceland	& A. Vasari
Hel-160 - 162	Drymen, Scotland	
Hel-174	Loch Kinord, Scotland	
Hel-335 - 339	Loch Kinord, Scotland	& Tikkanen
Hel-416 - 417	Loch of Park, Scotland	
Hel-418 - 421	Loch Kinord, Scotland	
Hel-422 - 424	Abernethy Forest, Scotland	

Hel-502 - 504	Loch Cuithir, Scotland	
Hel-558 - 563	Hafratjörn, Iceland	
Hel-570 - 575	Lómatjörn, Iceland	
Hel-601 - 602	Säynäjälampi, Kuusamo	
Hel-634	Säynäjälampi, Kuusamo	
Hel-675 - 679	Järvenpäänsuo, Utajärvi	& Holappa
Hel-718	Loch of Park, Scotland	& Tikkanen
Hel-741 - 743	Loch of Park, Scotland	& Tikkanen

VUORELA, I

Hel-253	Katinhännänsuo, Vihti	
Hel-352 - 354	Katinhännänsuo, Vihti	
Hel-355 - 357	Loimansuo, Huittinen	
Hel-403	Lehijärvi, Hattula	
Hel-434 - 435	Kirkkojärvi, Vehmaa	
Hel-509 - 511	Armijärvi, Hattula	

VUORINEN, J

Hel-255 - 265	Pappilanlampi, Pielisjärvi	& Tolonen
Hel-323	Pappilanlampi, Pielisjärvi	& Tolonen
Hel-695 - 698	Kiteenjärvi, Kitee	
Hel-701 - 704	Hyypiöjärvi, Kitee	
Hel-710 - 713	Varaslampi, Joensuu	

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