

# **RADIOCARBON DATES II**

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## INTRODUCTION

This second date list from the Radiocarbon Dating Laboratory of the University of Helsinki is a continuation of the first one published in 1979. The list brings the published dates up to about number Hel-1400 and covers the time from 1976 to 1980.

The detectors mentioned in Date List I are still in use and the replacement of the old electronics by more modern units has not changed the background or modern countrates.

A combustion bomb (Switsur 1972) has been used since 1976 for combustion of samples containing more than ca. 2% of carbon. The flowreactor for methane synthesis was replaced by a bomb type in 1977.

Dates reported are based on 95% of the activity of NBS oxalic acid and the Libby half-life  $5568 \pm 30$  a. Errors quoted ( $\pm 1\sigma$ ) include counting uncertainties for sample, standard and background. For samples up to number 1050 the uncertainty in the half-life was also included in the errors given.  $\delta^{13}\text{C}$  values reported in a few cases are relative to the PDB standard. No correction for isotopic fractionation is applied to the dates. The date list is compiled according to laboratory number. Series of samples from the same site are, however, grouped together. At the end of the report an index according to submitter is included.

## ACKNOWLEDGEMENTS

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## TYÖTJÄRVI SERIES, HOLLOLA

60°59'N, 25°28'E, 142.8 m a.s.l.

Coll. and subm. 1975 by P. Alhonen, J. Donner and M. Eronen.

General comment(JD): The series of samples, taken with a Livingstone piston sampler, were used for the determination of the rate of sedimentation in the lake and for the dating of the percentage and pollen influx diagrams as well as the diagrams of diatoms and Cladocera. The dates were compared with those from the nearby raised bog (Donner et al. 1978). See also Varrassuo series Hel-823.

Hel-674	9020 ± 190 7070 BC
Mud, 1.80-1.88 m depth.	
Hel-737	7870 ± 180 5920 BC
Mud, 1.40-1.50 m depth.	
Hel-738	5620 ± 140 3670 BC
Mud, 1.00-1.10 m depth.	
Hel-739	3460 ± 150 1510 BC
Mud, 0.60-0.70 m depth.	
Hel-740	1220 ± 110 AD 730
Mud, 0.20-0.30 m depth.	
Hel-770	2350 ± 100 400 BC
Mud, 0.40-0.50 m depth.	
Hel-771	4690 ± 110 2740 BC
Mud, 0.80-0.90 m depth.	
Hel-772	7230 ± 140 5280 BC
Mud, 1.20-1.30 m depth.	
Hel-773	8480 ± 180 6530 BC
Mud, 1.60-1.70 m depth.	

Hel-827	8580 $\pm$ 170 6630 BC
Mud, 1.70-1.80 m depth.	$\delta^{13}\text{C} = -24.2 \text{ ‰}$
Hel-828	7690 $\pm$ 160 5740 BC
Mud, 1.50-1.60 m depth.	$\delta^{13}\text{C} = -31.2 \text{ ‰}$
Hel-829	7410 $\pm$ 160 5460 BC
Mud, 1.30-1.40 m depth.	$\delta^{13}\text{C} = -28.8 \text{ ‰}$
Hel-830	6150 $\pm$ 150 4200 BC
Mud, 1.10-1.20 m depth.	$\delta^{13}\text{C} = -30.7 \text{ ‰}$
Hel-847	5270 $\pm$ 130 3320 BC
Mud, 0.90-1.00 m depth.	$\delta^{13}\text{C} = -36.8 \text{ ‰}$
Hel-848	4210 $\pm$ 150 2260 BC
Mud, 0.70-0.80 m depth.	$\delta^{13}\text{C} = -31.8 \text{ ‰}$
Hel-849	2950 $\pm$ 150 1000 BC
Mud, 0.50-0.60 m depth.	$\delta^{13}\text{C} = -31.7 \text{ ‰}$
Hel-850	1590 $\pm$ 90 AD 360
Mud, 0.30-0.40 m depth.	$\delta^{13}\text{C} = -31.4 \text{ ‰}$

#### NIMISJÄRVI SERIES, UTAJÄRVI

64°30'N, 26°46'E, 135 m a.s.l.

Coll. 1975 by C. Reynaud and M. Hjelmroos with a Livingstone piston sampler. Subm. 1975 by C. Reynaud.

Ref. Reynaud and Hjelmroos (1980).

Hel-756	4750 $\pm$ 230 2800 BC
Gyttja, 0.66-0.74 m depth.	
Comment(CR): Spruce immigration.	
Hel-757	3020 $\pm$ 170 1070 BC
Gyttja, 0.38-0.46 m depth.	
Comment(CR): Spruce decline.	

- Hel-758 4550  $\pm$  190  
2600 BC  
Gyttja, 1.10-1.19 m depth.  
Comment(CR): First *Plantago lanceolata*.
- Hel-759 9450  $\pm$  220  
7500 BC  
Gyttja, 2.20-2.28 m depth.  
Comment(CR): Pollen zone limit NIM I/NIM II.
- Hel-760 10950  $\pm$  350  
9000 BC  
Gyttja, 2.40-2.54 m depth.  
Comment(CR): Isolation phase.

## PALONEVA SERIES, JALASJÄRVI

62°28'N, 22°32'E

Coll. and subm. 1974 by G. Söderman.

- Hel-761 5120  $\pm$  170  
3170 BC  
Peat, 1.15-1.25 m depth, 143.2 m a.s.l.  
Comment(GS): Sample taken from central plateau of the raised bog, dated stratum below 25 cm thick aeolian cover sand. Dating indicates maximum age of dune formation at the site.
- Hel-762 3740  $\pm$  170  
1790 BC  
Peat, 0.80-0.90 m depth.  
Comment(GS): Sample taken from "kulju"-hollow at the NW-part of the raised bog, dated stratum above aeolian cover sand. The dating indicates minimum age of seized aeolian activity at the site.
- Hel-763 LEVITUNTURI, SIRKKA 2790  $\pm$  110  
840 BC  
67°45'N, 24°51'E, 202.8 m a.s.l.  
Peat, 2.90-3.00 m depth.  
Coll. and subm. 1974 by G. Söderman.  
Comment(GS): Sample taken from bog SE of Mt Levitunturi.  
Peat-stratum above solifluction sheet.

## DEGERMOSSA SERIES, BRÄNDÖ, AALAND

60°25'N, 21°05'E

Coll. with piston sampler and subm. 1975 by G. Glückert.

Hel-764 3370  $\pm$  120  
1420 BC

Gyttja clay and sand, 3.80-3.90 m depth.

Comment(GG): The postglacial invasion of *Picea* in SW Finland.

Hel-768 1800  $\pm$  160  
AD 150

Gyttja, 1.90-2.00 m depth.

Comment(GG): Isolation of the basin from the Baltic. The age of shoreline L VII.

Hel-765 HEIKINSAARENSUO, YLÄNE 2720  $\pm$  210  
770 BC

60°50'N, 22°15'E

Clay gyttja, 1.75-1.80 m depth.

Coll. with piston sampler and subm. 1975 by G. Glückert.

Comment(GG): Hiatus (Clypeus-stage).

Hel-766 JÄNESSUO, YLÄNE 5930  $\pm$  260  
3980 BC

60°50'N, 22°15'E

Clay gyttja, 3.05-3.10 m depth.

Coll. with piston sampler and subm. 1975 by G. Glückert.

Comment(GG): Hiatus (Clypeus-limit).

Hel-767 HIITTENMÄENSUO, HALIKKO 8620  $\pm$  190  
6670 BC

60°26'N, 23°00'E

Clay gyttja, 2.20-2.30 m depth.

Coll. with piston sampler and subm. 1975 by G. Glückert.

Comment(GG): The end of the *Ancylus* transgression in SW Finland.

Hel-768 DEGERMOSSA SERIES Hel-764

Hel-769 PULKKILA 2970  $\pm$  170  
1020 BC

64°15'N, 25°50'E, about 80 m<sup>a</sup>.s.l.

Wood, about 2.0 m depth.

Coll. 1975 by H. Kallio in connection with building work.

Subm. 1975 by Y. Vasari.

Comment(YV): Dated in order to check the possible need for further studies concerning this wood found "within till". It is possible that the wood has been buried as result of shifts in the course of the nearby Siikajoki.

Hel-770 - 773 TYÖTJÄRVI SERIES Hel-674

Hel-774 HAILUOTO

740 ± 90  
AD 1210

65°01'N, 24°40'E, 10 m a.s.l.

Peat, 0.23-0.25 m depth.

Coll. and subm. 1975 by C. Reynaud.

Ref. Reynaud and Hjelmroos (1976) and Reynaud and Hjelmroos (1980).

Comment(CR): Date of the first human influence on Hailuoto.

DOMSVATNET SERIES, VARDØ, NORWAY

70°19'30"N, 31°02'E

Coll. 1975 by H. Hyvärinen, M. Saarnisto and M. Eronen with a Livingstone sampler. Subm. 1975 by H. Hyvärinen.

General comment(HH): Five samples from Domsvatnet were dated to determine the rate of sedimentation and to date the local pollen zones. The results are consistent mutually and with the overall stratigraphy and suggest an even rate of sedimentation of 0.37 mm/yr (Hyvärinen 1976).

Hel-775	8570 ± 200 6620 BC
Clay gyttja, 2.80-2.90 m depth.	
Hel-776	7370 ± 170 5420 BC
Clay gyttja, 2.40-2.50 m depth.	
Hel-777	6000 ± 150 4050 BC
Clay gyttja, 1.90-2.00 m depth.	
Hel-778	4010 ± 140 2060 BC
Clay gyttja, 1.20-1.30 m depth.	
Hel-779	2560 ± 120 610 BC
Clay gyttja, 0.60-0.70 m depth.	



Hel-780 TAIVALKOSKI

630  $\pm$  140  
AD 1320

66°55'N, 24°42'E

Wood

Coll. and subm. 1975 by K. Korpela.

Comment(KK): The sample is taken to date a solifluction in the bank of Kemijoki river.

## PERÄPOHJOLA SERIES

Samples coll. 1975, 1976 and 1979 by M. Saarnisto using a piston corer.

General comment(MS): The following dates on mud (gyttja) from small lake basins in the area north of the Gulf of Bothnia provide data on deglaciation history, emergence of the area from the Baltic basin waters and pollen stratigraphy. Most samples are composites from equivalent stratigraphical levels of duplicate corers. See also Hel-707 - 709 and Hel-714 - 717 in Jungner (1979). Ref. Saarnisto (1981).

Hel-781 YLEMPI SILMÄSLAMPI, ROVANIEMI

8780  $\pm$  230  
6830 BC

66°39.5'N, 25°58'E, 206.7 m a.s.l.

Diatom mud, 5.39-5.45 m depth.

Comment(MS): For control of Hel-796. Birch pollen zone.

Hel-782 LOMPOLOJÄRVI, PELLO

10230  $\pm$  300  
8280 BC

66°41'N, 24°13'E, 170 m a.s.l.

Mud, 6.03-6.09 m depth.

Comment(MS): The date is older than expected, on the basis of nearby sites, by more than 1000 years.

Hel-795 YLEMPI SILMÄSLAMPI, ROVANIEMI

6660  $\pm$  190  
4710 BC

Diatom mud, 4.89-4.95 m depth.

Comment(MS): Birch-pine-alder pollen zone.

Hel-796 YLEMPI SILMÄSLAMPI, ROVANIEMI

9030  $\pm$  200  
7080 BC

Clay mud, 5.45-5.51 m depth.

Comment(MS): Emergence (isolation) of Lake Ylempi Silmäslampi from Baltic basin waters. Minimum date for deglaciation. Birch pollen zone.

- Hel-797 LOMPOLOJÄRVI, PELLO 9480  $\pm$  290  
7530 BC  
Mud, 5.97-6.03 m depth.  
Comment(MS): See Hel-782.
- Hel-938 ISO MUSTAJÄRVI, YLITORNIO 4820  $\pm$  170  
2870 BC  
66°25'N, 23°50'E, 70.0 m a.s.l.  
Mud, 1.81-1.87 m depth.  
Comment(MS): Emergence (isolation) of Lake Iso Mustajärvi from Baltic basin waters. Another date from equivalent stratigraphical level 5380 $\pm$ 65 (Lu-1431) in Hjelmroos (1979).
- Hel-984 LUPOJÄRVI, PELLO 7860  $\pm$  150  
5910 BC  
66°46'N, 24°02'E, 91.8 m a.s.l.  
Mud, 4.98-5.05 m depth.  
Comment(MS): Emergence (isolation) of Lake Lupojärvi from Baltic basin waters. The date is older than expected by more than 500 years.
- Hel-1334 KAAKKURINLAMPI, ROVANIEMI 5950  $\pm$  110  
4000 BC  
66°36'N, 25°37'E, 79.2 m a.s.l.  
Mud, 4.10-4.20 m depth.  
Comment(MS): For control of Hel-1335.
- Hel-1335 KAAKKURINLAMPI, ROVANIEMI 6220  $\pm$  120  
4270 BC  
Clay mud, 4.20-4.30 m depth.  
Comment(MS): Emergence (isolation) of Lake Kaakkurinlampi from Baltic basin waters.

## LAPINLAMPI SERIES, YLIKIIMINKI

65°10'N, 26°08'E, 86.9 m a.s.l.  
Samples coll. 1979 by M. Saarnisto using a piston corer.  
Subm. 1979 by M. Saarnisto.

- Hel-1332 3930  $\pm$  110  
1980 BC  
Mud, 3.05-3.20 m depth.  
Comment(MS): Immigration of spruce in pollen stratigraphy.

Hel-1333 6430  $\pm$  90  
4480 BC  
Clay-mud, 5.06-5.16 m depth.  
Comment(MS): Immediately predates the emergence (isolation) of Lake Lapinlampi from Baltic basin waters ("clypeus" lagoon of the Litorina Sea).

## MAASELÄNPURO SERIES, POSIO

66°02'N, 28°03'E

Coll. and subm. 1975 by O. Heikkinen.

Ref. Heikkinen and Kurimo (1977).

Hel-783 MAASELÄNPURO, lake 8880  $\pm$  190  
6930 BC  
7326.0N, 548.0 E, 247 m a.s.l.  
Sand/silt gyttja, 4.70 m depth.  
Comment(OH): Uppermost flowing water sediments of the ancient outflowchannel of Lake Kitka.

Hel-784 MAASELÄNPURO, lake 9480  $\pm$  190  
7530 BC  
Gyttja, 4.95 m depth.  
Comment(OH): Basal organic material in the ancient outflow channel of Lake Kitka.

Hel-785 MAASELÄNPURO, bog 8440  $\pm$  170  
6490 BC  
7326.5 N, 547.0 E, 248 m a.s.l.  
Eq- and C-rich gyttja, 2.75-2.80 m depth.  
Comment(OH): Cessation of flow conditions in the ancient outflow channel of Lake Kitka.

Hel-786 MAASELÄNPURO, bog 9390  $\pm$  170  
7440 BC  
Sand/silt gyttja, 3.30-3.35 m depth.  
Comment(OH): Basal organic material in the ancient outflow channel of Lake Kitka.

Hel-787 MAASELÄNPURO, bog 10050  $\pm$  180  
8100 BC  
Sand and silt with some gyttja, 3.45-3.55 m depth.  
Comment(OH): Basal organic material in the ancient outflow channel of Lake Kitka.

## SONKAJA SERIES, ILOMANTSI

62°45'N, 30°45'E, 180.8 m a.s.l.

Coll. 1975 by H. Hyvärinen and M. Saarnisto, 1976 by H. Hyvärinen and H. Jungner with a piston corer.

Subm. 1976 by H. Hyvärinen.

Hel-788 SO II/5 9170  $\pm$  180  
7220 BC

Gyttja clay, 2.90-3.00 m depth.

Comment(HH): Humic fraction of sample Hel-745 dated at 9840 $\pm$ 180 BP. The sample is from organic silt intercalated between sands at the base of the section and it belongs to the Artemisia pollen zone (Younger Dryas). The dates are younger than expected. The lower age obtained for the humic fraction suggests contamination by younger humus in groundwater percolated through the basal sands.

Hel-842 SO III/7 9360  $\pm$  190  
7410 BC

Clay gyttja/gyttja, 1.025-1.050 m depth.

Comment(HH): The date relates to the early Flandrian Birch Zone and conforms to expectation.

Hel-843 SO III/8 8950  $\pm$  170  
7000 BC

Clay gyttja/gyttja, 0.925-0.950 m depth.

Comment(HH): The date relates to the Birch Zone/Pine Zone transition and conforms to expectation.

Hel-844 SO III/9 8540  $\pm$  180  
6590 BC

Clay gyttja/gyttja, 0.825-0.850 m depth.

Comment(HH): The date relates to the lower part of the Pine-Birch Zone and is consistent with other dates from the core (Hel-845, 843, 842).

Hel-845 SO III/10 7510  $\pm$  170  
5560 BC

Clay gyttja/gyttja, 0.525-0.550 m depth.

Comment(HH): The date relates to the middle part of Pine-Birch Zone and is consistent with other dates from the core (Hel-844, 843, 842).

See also Sonkaja series Hel-73, 85, 86, 744, 745 in Jungner (1979).

## PERÄ-PUIKKONEN SERIES, POSIO

7328.5 N, 549.5 E / 66°03'N, 28°05'E, 246 m a.s.l.

Coll. 1975 by O. Heikkinen and M. Eronen. Subm. 1975 by O. Heikkinen.

Ref. Heikkinen and Kurimo (1977).

Hel-789 9340  $\pm$  210  
7390 BC

Gyttja clay and clay gyttja, 5.05-5.15 m depth.

Comment(OH): Basal organic material of a peat-filled basin isolated from Lake Kitka.

Hel-790 9320  $\pm$  200  
7370 BC

Clay gyttja, 4.97-5.02 m depth.

Comment(OH): Basal organic material of a small lake isolated from Lake Kitka.

Hel-791 8570  $\pm$  170  
6620 BC

Clay gyttja, 4.68-4.73 m depth.

Comment(OH): Appearance of alder.

Hel-792 7540  $\pm$  210  
5590 BC

Clay gyttja, 4.47-4.52 m depth.

Comment(OH): Spread of alder.

Hel-793 6550  $\pm$  190  
4600 BC

Gyttja, 3.775-3.825 m depth.

Comment(OH): Isolation of basin.

Hel-794 KILTERI SERIES Hel-475

Hel-795 - 797 PERÄPOHJOLA SERIES Hel-781

## PAATSJOEN LUUSUA, INARI

Coll. 1974 by M. Torvinen. Subm. 1975 by A. Siiriäinen.

Hel-798 7310  $\pm$  200  
5360 BC

Charcoal, 0.15 m depth.

Hel-870 4840  $\pm$  140  
2890 BC  
Charcoal, 0.10 m depth.

## HUKKALANHARJU SERIES, VIEREMÄ

Coll. 1975 by L. Pohjakallio. Subm. 1975 by A. Siiriäinen.  
General comment(LP): The samples are from a hearth. The dwelling site is archaeologically dated to the Early Asbestos Ceramic or the typical Comb Ceramic period.

Hel-799 5190  $\pm$  140  
3240 BC  
Charcoal, 0.10 m depth.

Hel-800 5340  $\pm$  150  
3390 BC  
Charcoal, 0.50 m depth.

Hel-801 PYHEENSILTA, MYNÄMÄKI 1460  $\pm$  130  
AD 490  
Charcoal, 14775:110  
Coll. 1959 by C.F. Meinander.  
Subm. 1975 by M. Perkkö.

Hel-802 PYHEENSILTA, MYNÄMÄKI 940  $\pm$  130  
AD 1010  
Charcoal, 14775:291

## SKI SERIES

Samples from skis of various types found in bogs.  
Subm. 1974-1980 by E. Naskali and A. Siiriäinen.

Hel-803 PETÄJÄAAPA, KEMIJÄRVI 1270  $\pm$  100  
AD 680  
KM 9908

Hel-1059 KORTEJÄRVI, URJALA 1550  $\pm$  110  
AD 400

Hel-1077 SUMMASJÄRVI, SAARIJÄRVI 1460  $\pm$  130  
AD 490  
MVKTE 8528

Hel-1078 KAATAMO, LIPERI 1670  $\pm$  100  
AD 280  
MVKTE 10351

Hel-1079	SÄRÄISNIEMI, VAALA	1640 $\pm$ 110 AD 310
Hel-1097	SIILINJÄRVI	930 $\pm$ 120 AD 1020
Hel-1233	ÄKÄSLOMPOLO, KOLARI	530 $\pm$ 90 AD 1420
	MVKTE 10521	
Hel-1235	HÄMÄLÄNMÄKI, PUUMALA	300 $\pm$ 90 AD 1650
	MVKTE 10586	
Hel-1237	POSIO	210 $\pm$ 100 AD 1740
	MVKTE 10421	
Hel-1328	POSIO	1420 $\pm$ 100 AD 530
	MVKTE 10670	
Hel-1329	SYSMÄ	2220 $\pm$ 100 270 BC
	KM 13016	
Hel-1330	SALLA	4470 $\pm$ 110 2520 BC
	MVKTE 8227	
Hel-1331	PIELISJÄRVI	540 $\pm$ 90 AD 1410
	MVKTE 8586	
Hel-1342	VIRRAT	900 $\pm$ 110 AD 1050
	MVKTE 8773	
Hel-1343	LAPPI TL.	1110 $\pm$ 90 AD 840
	MVKTE 8913	
Hel-1344	TYRVÄÄ	1880 $\pm$ 90 AD 70
	MVKTE 8704	
Hel-1345	KATILA, KANGASALA	1780 $\pm$ 100 AD 170
	MVKTE 10697	

Hel-804 DAVITS, ESPOO

2500  $\pm$  110  
550 BC

60°11'N, 24°45'E

Charcoal, 19431:17, about 0.35-0.40 m depth.

Coll. and subm. 1974 by M. Schauman-Lönnqvist.

Comment(MS-L): The sample is from a fire-place in a dwelling site connected to a burial ground and the date agrees with the archaeological finds from the site.

Ref. Meinander (1969).

MANGS SERIES, KIRKNIEMI, LOHJA

60°11'N, 23°55'E

Coll. 1975 by S. Sarkki. Subm. 1975 by A. Siiriäinen.

General comment(SS): Charcoal pit with stone siding close to Early Iron Age burial cairns.

Hel-805 MANGS 1

470  $\pm$  120  
AD 1480

106/102, 2. level

Charcoal, about 0.30 m depth.

Hel-806 MANGS 2

510  $\pm$  130  
AD 1440

106/104, 5. level

Charcoal, about 0.60 m depth.

SUBFOSSIL PINE SERIES FROM NORTHERN FINLAND

Coll. and subm. 1975 and 1976 by M. Eronen.

Ref. Eronen (1979), Eronen and Hyvärinen (1981).

Hel-807 TSARSEJOKSKAIDI

980  $\pm$  120  
AD 970

7741.55 N, 475.935/27°E, 227 m a.s.l.

Appr. 60 outermost tree-rings.

Comment(ME): Subfossil pine (in water near shore of a lake) from pine tree limit zone.

Hel-808 LOHIKOSTE I

620  $\pm$  110  
AD 1330

7751.65 N, 475.30/27°E, 115 m a.s.l.

Appr. 25 innermost tree-rings.

Comment(ME): Subfossil pine (on muddy shore of a lake) from pine limit.



- Hel-821 LOHIKOSTE II 1190  $\pm$  130  
AD 760  
 7751.30 N, 474.95/27 $^{\circ}$ E, 115 m a.s.l.  
 Appr. 10-40 tree-rings.  
 Comment(ME): Subfossil pine (on muddy shore of a lake)  
 from pine limit.
- Hel-822 LOHIKOSTE III 3900  $\pm$  130  
1950 BC  
 7751.5 N, 475.05/27 $^{\circ}$ E, 115 m a.s.l.  
 Appr. 35 innermost tree-rings.  
 Comment(ME): Subfossil pine (on muddy shore of a lake)  
 from pine limit.
- Hel-833 AILIGASJÄRVI I 1730  $\pm$  150  
AD 220  
 7759.35 N, 502.90/27 $^{\circ}$ E, 75 m a.s.l.  
 10 innermost tree-rings.  
 Comment(ME): Subfossil pine (in water near shore of a  
 small lake) found beyond the present pine limit.
- Hel-834 AILIGASJÄRVI II 2280  $\pm$  130  
330 BC  
 7759.35 N, 502.95/27 $^{\circ}$ E, 78 m a.s.l.  
 Appr. 15 innermost tree-rings.  
 Comment(ME): Subfossil pine (in water near shore of a  
 small lake) found beyond the present pine limit.
- Hel-835 KEÄSSEMAHJOHKA I 4170  $\pm$  190  
2220 BC  
 7777.15 N, 525.00/27 $^{\circ}$ E, 85 m a.s.l.  
 Appr. 30 innermost tree-rings.  
 Comment(ME): Subfossil pine (in a ditch on a mire) found  
 beyond the present pine limit.
- Hel-836 KEÄSSEMAHJOHKA II 3050  $\pm$  170  
1100 BC  
 7777.30 N, 524.85/27 $^{\circ}$ E, 75 m a.s.l.  
 Appr. 35 innermost tree-rings.  
 Comment(ME): Subfossil pine (on shore of a small lake  
 on a mire) found beyond the present pine limit.
- Hel-837 PETSIKKO I 6930  $\pm$  220  
4980 BC  
 7708.80 N, 508.80/27 $^{\circ}$ , 260 m a.s.l.  
 Appr. 70 innermost tree-rings.

Comment(ME): Subfossil pine (in shallow water in a small pool) found in outer part of the present pine tree limit zone.

Hel-912 NÄKKÄLÄ I, ENONTEKIÖ 3420  $\pm$  150  
1470 BC

7619.45 N, 486.35/24<sup>o</sup>E, 410 m a.s.l.

Comment(ME): Subfossil pine (in water near shore of a small lake) found in the outer part of the pine tree limit zone.

Hel-913 NÄKKÄLÄ II, ENONTEKIÖ 4320  $\pm$  150  
2370 BC

7619.00 N, 486.20/24<sup>o</sup>E, 410 m a.s.l.

Comment(ME): Subfossil pine (in a muddy depression) found in the outer part of the present pine tree limit zone.

Hel-914 NÄKKÄLÄ III, ENONTEKIÖ 5410  $\pm$  170  
3460 BC

7619.00 N, 486.20/24<sup>o</sup>E, 410 m a.s.l.

Comment(ME): Subfossil pine (in a muddy depression) found in the outer part of the present pine tree limit zone.

Hel-915 TSOHKKAJAVRI, ENONTEKIÖ 4180  $\pm$  160  
2230 BC

7619.50 N, 541.30/21<sup>o</sup>E, 505 m a.s.l.

Comment(ME): Subfossil pine (in water near shore of a small lake) found beyond the present pine limit.

Hel-916 HAUKIJÄRVET I, ENONTEKIÖ 5760  $\pm$  180  
3810 BC

7618.60 N, 540.95/21<sup>o</sup>E, 478 m a.s.l.

Comment(ME): Subfossil pine (in water near shore of a small lake) found beyond the present pine limit.

Hel-917 HAUKIJÄRVET II, ENONTEKIÖ 4990  $\pm$  170  
3040 BC

7618.05 N, 540.85/21<sup>o</sup>, 468 m a.s.l.

Comment(ME): Subfossil pine (in water near shore of a small lake) found beyond the present pine limit.

Hel-918 HAUKIJÄRVET III, ENONTEKIÖ 4620  $\pm$  170  
2670 BC

7618.00 N, 540.90/21<sup>o</sup>E, 468 m a.s.l.

Comment(ME): Subfossil pine (in water near shore of a small lake) found beyond the present pine limit.

- Hel-919 PÄTTIKKÄ, ENONTEKIÖ 4160  $\pm$  170  
2210 BC  
7612.40 N, 531.80/21<sup>o</sup>E, 385 m a.s.l.  
Comment(ME): Subfossil pine (in water near shore of a small lake) found beyond the present pine limit.
- Hel-1063 PIKKUVAARAN LOMPOLO I 5620  $\pm$  120  
3670 BC  
7656.70 N, 497.15/21<sup>o</sup>, 560 m a.s.l.  
Appr. 40 innermost tree-rings.  
Comment(ME): Subfossil pine (in water near shore of a small lake) found beyond the present pine limit.
- Hel-1064 PIKKUVAARAN LOMPOLO II 5140  $\pm$  110  
3190 BC  
7656.70 N, 497.15/21<sup>o</sup>E, 560 m a.s.l.  
Appr. 50 innermost tree-rings.  
Comment(ME): Subfossil pine (in water near shore of a small lake) found beyond the present pine limit.
- Hel-1065 AILAKKAVAARAN LOMPOLO I 5650  $\pm$  110  
3700 BC  
7651.95 N, 497.95/21<sup>o</sup>E / 68<sup>o</sup>57'N, 20<sup>o</sup>57'E,  
505 m a.s.l.  
Appr. 130 innermost tree-rings.  
Comment(ME): Subfossil pine (in water near shore of a small lake) found beyond the present pine limit.
- Hel-1066 PEERAVAARAN LOMPOLO I 4640  $\pm$  130  
2690 BC  
7645.75 N, 505.55/21<sup>o</sup>E, 495 m a.s.l.  
Appr. 110 innermost tree-rings.  
Comment(ME): Subfossil pine (in water near shore of a small lake) found beyond the present pine limit.
- Hel-1067 VALLIJÄRVI I 4860  $\pm$  130  
2910 BC  
7622.80 N, 523.55/21<sup>o</sup>E / 68<sup>o</sup>41'20"N, 21<sup>o</sup>34'45"E,  
470 m a.s.l.  
Appr. 125 innermost tree-rings.  
Comment(ME): Subfossil pine (in water near shore of a small lake) found beyond the present pine limit.

- Hel-1068 VALLIJÄRVI II 6600  $\pm$  130  
4650 BC  
Apr. 150 tree-rings.  
Comment(ME): Subfossil pine (in water near shore of a small lake) found beyond the present pine limit.
- Hel-1192 AILAKKAVAARAN LOMPOLO II 3740  $\pm$  100  
1790 BC  
Apr. 40 innermost tree-rings.  
Comment(ME): Subfossil pine (in water near shore of a small lake) found beyond the present pine limit.
- Hel-1193 AILAKKAVAARAN LOMPOLO III 4780  $\pm$  110  
2830 BC  
Apr. 40 innermost tree-rings.  
Comment(ME): Subfossil pine (in water near shore of a small lake) found beyond the present pine limit.
- Hel-1194 AILAKKAVAARAN LOMPOLO IV 3760  $\pm$  110  
1810 BC  
Apr. 70-130 outermost tree-rings.  
Comment(ME): Subfossil pine (in water near shore of a small lake) found beyond the present pine limit.
- Hel-1387 VALLIJÄRVI III 5610  $\pm$  120  
3660 BC  
Comment(ME): Subfossil pine (in water near shore of a small lake) found beyond the present pine limit.
- Hel-1388 VALLIJÄRVI IV 4830  $\pm$  130  
2880 BC  
Comment(ME): Subfossil pine (in water near shore of a small lake) found beyond the present pine limit.
- Hel-1389 VALLIJÄRVI V 6280  $\pm$  130  
4330 BC  
Comment(ME): Subfossil pine (in water near shore of a small lake) found beyond the present pine limit.

## TEL LACHISH SERIES, PALESTINA

Coll. 1975-1976 during an excavation under direction of D. Ussishkin. Subm. 1976-1977 by M. Louhivuori.  
Ref. Ussishkin (1978).

- Hel-809 3450  $\pm$  120  
1500 BC  
 Area P. Level VIII. A storeroom in Middle Bronze  
 Palace: Locus 3106.  
 Charred wood from shelves or jar-stands.  
 Palace destroyed at end of Middle Bronze - 16<sup>th</sup> century BC.
- Hel-810 3090  $\pm$  120  
1140 BC  
 Area P. Level VI. Late Bronze Temple: near staircase.  
 Charred wood (cedar) from beams used in structure.  
 Temple destroyed at end of Late Bronze ca. 1200 BC.
- Hel-1025 No 10883 2830  $\pm$  110  
880 BC  
 Area G. Level II. A storeroom: Locus 4084.  
 Charred wood (cedar) from shelves or jar-stands.  
 The store destroyed in 588/6 BC.
- Hel-1026 No 8943 2940  $\pm$  110  
990 BC  
 Area S. Level III. A courtyard of a house: Locus 3561.  
 Charred wood found near wall of structure.  
 The house destroyed in 701 BC.
- Hel-1027 No 13543 2830  $\pm$  150  
880 BC  
 Area S. Level IV - Later Phase, an installation in  
 Level IV house.  
 Charred wood found inside the installation.  
 Duration of level: ca. 900-750 BC.
- Hel-1028 No 15388 3510  $\pm$  120  
1560 BC  
 Area P. Level VI. Late Bronze Temple: northern entrance.  
 Charred wood (cedar) from panels of doorway.  
 Temple destroyed at end of Late Bronze ca. 1200 BC.
- Hel-811 ALAJOKI, LAPUA 2760  $\pm$  170  
810 BC  
 6301/2258  
 Bone of an elk.  
 Coll. 1902 by K.B. Miller. Subm. 1976 by A. Forstén.

Hel-812 JUOJÄRVI, OUTOKUMPU 9150  $\pm$  280  
7200 BC  
62°40'N, 28°35'E, No 41063  
Gyttja, 0.35-0.65 m depth.  
Coll. with a piston corer and subm. 1975 by E. Sandberg.  
Ref. Sandberg (1976).

Hel-813 AHVENJÄRVI, ALAVOJAKKALA, TORNIO 1640  $\pm$  130  
AD 310  
Turfa Herbalea, 0.37-0.39 m depth.  
Coll. 1973 and subm. 1976 by M. Hjelmroos.

RETULANSUO SERIES, HATTULA

61°10'N, 24°20'E, 81 m a.s.l.  
Coll. 1975 and subm. 1976 by I. Vuorela.  
Ref. Núñez and Vuorela (1979).

Hel-814 160  $\pm$  90  
AD 1790  
Sphagnum peat, 0.17-0.19 m depth.  
Comment(IV): The steep rise of the Cerealia curve in  
association with distinct reactions of the herbs and  
tree species and the loss-on-ignition values.

Hel-815 modern  
Sphagnum peat, 0.09-0.11 m depth.  
Comment(IV): The steep rise of the Calluna curve. The  
sample may have been contaminated by thin Calluna roots.

Hel-816 260  $\pm$  100  
AD 1690  
Sphagnum peat, 0.40-0.42 m depth.  
Comment(IV): The stabilization of the Cerealia curve.

KAINUUNKYLÄ SERIES, KANNALA, YLITORNIO

Coll. 1975 and subm. 1976 by P. Koivunen.

Hel-817 No 1 720  $\pm$  130  
AD 1230  
7347.35 N, 489.61 E (Area A I, 1 10)  
Charred wood from a hearth, 0.53 m depth.

Hel-818	No 4	900 $\pm$ 130
7347.35 N, 489.61 E (A I, i 14)		AD 1050
Humified wood, 0.79 m depth.		
Hel-819	No 6	830 $\pm$ 100
7347.35 N, 489.61 E (A I, h 12)		AD 1120
Charred wood, 0.73 m depth.		
Hel-820	No 9	260 $\pm$ 120
7347.52 N, 489.45 E (B II, e 43)		AD 1690
Humified wood, 0.86 m depth.		

Hel-821 - 822 SUBFOSSIL PINE SERIES Hel-807

VARRASSUO SERIES, HOLLOLA

60°59'N, 25°29'E, 147 m a.s.l.

Coll. and subm. 1975 and 1976 by P. Alhonen, J. Donner and M. Eronen.

Comment(JD): The series of samples from the raised bog, taken with a piston sampler, were used for the determination of the rate of peat growth and for dating the percentage and pollen influx diagrams for a comparison with the nearby Työtjärvi lake sediments. Donner et al. (1978). See Työtjärvi series Hel-674.

Hel-823	3380 $\pm$ 160
Peat, 1.20-1.30 m depth.	1430 BC
Hel-824	5140 $\pm$ 140
Peat, 2.30-2.40 m depth.	3190 BC
Hel-825	8580 $\pm$ 170
Peat, 3.25-3.35 m depth.	6630 BC
	$\delta^{13}C = -25.7 \text{ ‰}$
Hel-826	9010 $\pm$ 160
Peat, 4.10-4.18 m depth	7060 BC
	$\delta^{13}C = -27.4 \text{ ‰}$

Hel-838	1400 $\pm$ 100 AD 550
Peat, 0.50-0.60 m depth.	$\delta^{13}\text{C} = -28.7\%$
Hel-839	3160 $\pm$ 150 1210 BC
Peat, 1.50-1.60 m depth.	$\delta^{13}\text{C} = -27.4\%$
Hel-840	5900 $\pm$ 140 3950 BC
Peat, 2.50-2.60 m depth.	$\delta^{13}\text{C} = -28.2\%$
Hel-841	8020 $\pm$ 170 6070 BC
Peat, 3.50-3.60 m depth.	$\delta^{13}\text{C} = -31.0\%$
Hel-846	3650 $\pm$ 120 1700 BC
Peat, 1.10-1.20 m depth.	$\delta^{13}\text{C} = -30.5\%$
Hel-863	4210 $\pm$ 130 2260 BC
Peat, 1.90-2.00 m depth.	
Hel-864	7850 $\pm$ 160 5900 BC
Peat, 2.90-3.00 m depth.	$\delta^{13}\text{C} = -25.1\%$
Hel-865	9010 $\pm$ 180 7060 BC
Peat, 3.70-3.80 m depth.	$\delta^{13}\text{C} = -22.3\%$
Hel-866	9160 $\pm$ 190 7210 BC
Peat, 3.90-4.00 m depth.	
Hel-908	2560 $\pm$ 110 610 BC
Peat, 0.90-1.00 m depth.	$\delta^{13}\text{C} = -25.8\%$
Hel-909	4340 $\pm$ 160 2390 BC
Peat, 2.10-2.20 m depth.	$\delta^{13}\text{C} = -22.4\%$
Hel-910	6020 $\pm$ 140 4070 BC
Peat, 2.70-2.80 m depth.	$\delta^{13}\text{C} = -24.2\%$



Hel-911	7980 $\pm$ 200 6030 BC
Peat, 3.10-3.20 m depth.	$\delta^{13}C = -24.3 \text{ ‰}$
Hel-923	2480 $\pm$ 110 530 BC
Peat, 0.70-0.80 m depth.	$\delta^{13}C = -24.1 \text{ ‰}$
Hel-924	3690 $\pm$ 130 1740 BC
Peat, 1.70-1.80 m depth.	
Hel-925	8560 $\pm$ 170 6610 BC
Peat, 3.60-3.70 m depth.	$\delta^{13}C = -22.0 \text{ ‰}$
Hel-926	2920 $\pm$ 120 970 BC
Peat, 1.00-1.10 m depth.	$\delta^{13}C = -23.2 \text{ ‰}$
Hel-927	4000 $\pm$ 120 2050 BC
Peat, 1.60-1.70 m depth.	$\delta^{13}C = -23.5 \text{ ‰}$
Hel-928	8660 $\pm$ 170 6710 BC
Peat, 3.40-3.50 m depth.	$\delta^{13}C = -22.1 \text{ ‰}$

Hel-827 - 830 TYÖTJÄRVI SERIES Hel-674

KUKKARKOSKI, LIETO

Coll. 1975 by M. Torvinen and M. Núñez.

Subm. 1976 by T. Edgren.

Hel-831	4320 $\pm$ 170 2370 BC
19727:163	
Charcoal, 0.35 m depth.	
Hel-832	4890 $\pm$ 150 2940 BC
196/C/17	
Charcoal, 1.01 m depth.	

Hel-833 - 837 SUBFOSSIL PINE SERIES Hel-807

Hel-838 - 841 VARRASSUO SERIES Hel-823

Hel-842 - 845 SONKAJA SERIES Hel-788

Hel-846 VARRASSUO SERIES Hel-823

Hel-847 - 850 TYÖTJÄRVI SERIES Hel-674

#### LAIKIPIA SERIES, KENYA

0°23'N, 36°45'E

Coll. and subm. 1976 by A. Siiriäinen.

General comment for Hel-851, 871 and 852 (AS): Dates the early Late Stone Age pastoral occupation in the Eastern Highlands of Kenya (Siiriäinen 1977).

Hel-851 KFR-A5/Burial 1 2490  $\pm$  110  
540 BC

Bone, 0.80 m depth.

Hel-852 KFR-A5/Burial 2 2320  $\pm$  160  
370 BC

Bone

Hel-853 KFR-C4 760  $\pm$  90  
AD 1190

Bone, 0.40 m depth.

Comment(AS): A cairn burial in Central Kenya showing the latest possible date of the adaption of the burial practice still in use among the Nilotic and Cushitic tribes in East Africa.

Hel-871 KFR-A5/Burial 1b 2830  $\pm$  120  
880 BC

Charcoal, 0.70-0.80 m depth.

#### OULANKA SERIES, NORTH-EASTERN FINLAND

Various methods (piston corer, digging, diving) have been used in collecting organic material (buried trunks, submerged peat etc.) in solving the deglaciation, fluvial processes and palaeohydrological questions in the Oulanka valley.

Coll. and subm. 1976 and 1979 by L. Koutaniemi.

For ref. Hel-854 see Koutaniemi (1979a, 1981b), Hel-855, 857, 929 Koutaniemi (1979a,b), Hel-1253, 1254, 1280 Koutaniemi (1981a), and Hel-988, 1252, 1439, 1440 Koutaniemi (1982).

- |         |  |                            |
|---------|--|----------------------------|
| Hel-854 | VIHVILÄLAMPI, KUUSAMO  | 8920 $\pm$ 240<br>6970 BC  |
|         | 7355.44 N, 484.92 E  |                            |
|         | Mud, 8.52-8.62 m depth.  |                            |
| Hel-855 | KOURULAMPI, KIUTAKÖNGÄS, KUUSAMO   | 10350 $\pm$ 290<br>8400 BC |
|         | 7364.46 N, 468.80 E  |                            |
|         | Detritus gyttja, 7.83-7.88 m depth.  |                            |
|         | Comment(LK): Obvious hard-water effect.  |                            |
| Hel-857 | KOTALAMPI, LIIKASENVAARA   | 8360 $\pm$ 240<br>6410 BC  |
|         | 7370.46 N, 473.42 E  |                            |
|         | Detritus gyttja, 2.08-2.13 m depth.  |                            |
| Hel-929 | OULANKA, KUUSAMO   | 2300 $\pm$ 160<br>350 BC   |
|         | 7360.67 N, 478.03 E  |                            |
|         | Humified peat from the bottom of an ancient channel of the river Oulankajoki, 1.175-1.200 m depth. |                            |
| Hel-935 | VIHVILÄLAMPI, KUUSAMO  | 8090 $\pm$ 250<br>6140 BC  |
|         | 7355.44 N, 484.92 E  |                            |
|         | Humified peat, 8.31-8.41 m depth.  |                            |
| Hel-936 | KOURULAMPI, KIUTAKÖNGÄS, KUUSAMO   | 8240 $\pm$ 230<br>6290 BC  |
|         | 7364.46 N, 468.80 E  |                            |
|         | Detritus gyttja, 7.65-7.70 m depth.  |                            |
| Hel-937 | KOTALAMPI, LIIKASENVAARA, KUUSAMO  | 8930 $\pm$ 170<br>6980 BC  |
|         | 7370.46 N, 473.42 E  |                            |
|         | Detritus gyttja, 1.88-1.98 m depth.  |                            |
| Hel-988 | OULANKA, KUUSAMO   | 9500 $\pm$ 220<br>7550 BC  |
|         | 66°25'N, 29°31'E   |                            |
|         | Plant remains from bottom of the river Oulankajoki.  |                            |

- Hel-1252 SIIKAUOPAJA, OULANKA, KUUSAMO 8600  $\pm$  150  
6650 BC  
7357.60 N, 481.52 E  
Plant remains, about 3 m depth.
- Hel-1253 SIIKAUOPAJA, OULANKA, KUUSAMO 1620  $\pm$  160  
AD 330  
7359.76 N, 478.70 E  
Deposited plant remains, 1.96-2.01 m depth.
- Hel-1254 SIIKAUOPAJA, OULANKA, KUUSAMO 1530  $\pm$  140  
AD 420  
Deposited plant remains, 1.52-1.57 m depth.
- Hel-1278 JÄKÄLÄMUTKA, OULANKA, KUUSAMO modern  
7355.46 N, 483.29 E  
Wood, about 0.5 m depth.
- Hel-1279 JÄKÄLÄMUTKA, OULANKA, KUUSAMO modern  
Wood, about 0.5 m depth.
- Hel-1280 RAJAVYÖHYKE, OULANKA, KUUSAMO 2660  $\pm$  110  
710 BC  
7354.19 N, 484.79 E  
Wood, 4.85 m depth.
- Hel-1304 SIIKAUOPAJA, OULANKA, KUUSAMO modern  
7356.85 N, 481.66 E  
Wood, 1 m depth.
- Hel-1305 SIIKAUOPAJA, OULANKA, KUUSAMO modern  
Wood, 1 m depth.
- Hel-1306 SIIKAUOPAJA, OULANKA, KUUSAMO 240  $\pm$  90  
AD 1710  
Wood, about 2 m depth.
- Hel-1307 SIIKAUOPAJA, OULANKA, KUUSAMO modern  
7357.00 N, 481.60 E  
Wood, 0.80 m depth.
- Hel-1308 NURMISAARI 290  $\pm$  110  
AD 1660  
7362.04 N, 475.49 E  
Wood, 1.4 m depth.

Hel-1309 NURMISAARI

310  $\pm$  90  
AD 1640

Wood, 1.5 m depth.

Hel-856 RUUNAPÄÄNNIEMI, SULKAVA

1070  $\pm$  90  
AD 880

61°46'N, 28°24'E, 86 m a.s.l.

Charcoal, 0.10 m depth.

Coll. 1975 by C. Carpelan and H. Jungner.

Comment(CC): Charcoal from the podzol representing some ancient forest fire at a Stone Age dwelling site. The sample was collected in connection to thermoluminescent dating.

Hel-857 OULANKA SERIES Hel-854

Hel-858 PUISTOLA

modern

Bone found in gravel.

Subm. 1976 by B. Kurtén.

Comment: The date excludes the possibility that the bone is from a bison.

## LAUHANVUORI SERIES

Coll. with a piston corer and subm. 1976-1980 by R. Salomaa.

General comment(RS): Clay/silty mud, mud and peat samples from basins of various altitudes in the Lauhavuori area, southern Pohjanmaa, western Finland. The samples date the post-glacial shore-line displacement history, forest history and paludification of the area (Salomaa 1982, Salomaa and Alhonen 1983).

Hel-859 SPITAALIJÄRVENSUO, ISOJOKI

6230  $\pm$  160  
4280 BC

6902.2 N, 248.1 E / 62°08'N, 22°10'E, about 176 m a.s.l.

Sphagnum peat, 1.50-1.45 m depth.

Comment(RS): The beginning of paludification of dry land.

Hel-860 LIKOLAMMINSUO, KAUAJOKI

6840  $\pm$  160  
4890 BC

6908.4 N, 249.1 E / 62°12'N, 22°11'E, about 180 m a.s.l.

Carex-Sphagnum peat, 2.30-2.25 m depth.

Comment(RS): The beginning of paludification of dry land.

- Hel-861 KÄLMINKEIDAS, ISOJOKI 7490  $\pm$  170  
5540 BC  
6894.8 N, 244.7 E / 62°04'N, 22°06'E, about 115 m a.s.l.  
Sphagnum peat, 3.32-3.25 m depth.  
Comment(RS): The beginning of paludification of dry land.
- Hel-862 KYLMÄNKULLAANKEIDAS, ISOJOKI 4920  $\pm$  140  
2970 BC  
6905.5 N, 246.2 E / 62°10'N, 22°08'E, about 154 m a.s.l.  
Sphagnum peat, 0.50-0.43 m depth.  
Comment(RS): The beginning of paludification of dry land.
- Hel-1171 HAUKILAMMI, ISOJOKI 8230  $\pm$  160  
6280 BC  
62°03'N, 22°05'E, about 107 m a.s.l.  
Claygyttja and gyttja, 1.96-1.90 m depth (2x).  
Comment(RS): Isolation of the basin from the Ancylus Lake. The minimum age of immigration of Alnus to the area.
- Hel-1172 SPITAALIJÄRVENSUO, ISOJOKI 3730  $\pm$  150  
1780 BC  
62°08'N, 22°10'E, about 176 m a.s.l.  
Carex-Sphagnum peat, 1.20-1.15 m depth.  
Comment(RS): Immigration of Picea (Pc<sup>+</sup>) to the area.
- Hel-1173 LIKOLAMMENSUO, KAUAJOKI 3720  $\pm$  140  
1770 BC  
62°12'N, 22°11'E, about 180 m a.s.l.  
Sphagnum peat, 1.30-1.20 m depth.  
Comment(RS): Immigration of Picea (Pc<sup>+</sup>) to the area.
- Hel-1174 LIKOLAMMENSUO, KAUAJOKI 3900  $\pm$  130  
1950 BC  
Sphagnum peat, 1.80-1.70 m depth.  
Comment(RS): The beginning of Picea curve (Pc<sup>o</sup>).
- Hel-1175 KODESJÄRVI, ISOJOKI 8010  $\pm$  160  
6060 BC  
62°03'N, 22°04'E, about 94 m a.s.l.  
Claygyttja, 3.26-3.13 m depth.  
Comment(RS): Isolation of the basin from the Ancylus Lake.
- Hel-1291 KAUAJÄRVI, KAUAJOKI 7960  $\pm$  170  
6010 BC  
62°12'N, 22°18'E, about 144 m a.s.l.  
Silty gyttja, 3.85-3.70 m depth.  
Comment(RS): Just upon the spread of Alnus (A<sup>+</sup>). The

immigration of Alnus to the area took place between this date and Hel-1292.

- Hel-1292 KAUHAJÄRVI, KAUHAJOKI 8510  $\pm$  190  
6560 BC  
Silty gyttja, 3.95-3.85 m depth.  
Comment(RS): Isolation of the basin from the Ancylus Lake.  
Just below the immigration of Alnus (A<sup>+</sup>) to the area.
- Hel-1293 JUURAKKOJÄRVI, KAUHAJOKI 8920  $\pm$  180  
6970 BC  
62°15'N, 22°27'E, 167 m a.s.l.  
Gyttja, 4.60-4.50 m depth.  
Comment(RS): Immigration of Alnus (A<sup>+</sup>) to the area. The  
age is obviously some 500 years too old. See Hel-1291,  
1292, 1364. However, the other date from the same core  
30 cm lower seem to be correct. Sedimentation seem to be  
continuous without hiatus points.
- Hel-1294 JUURAKKOJÄRVI, KAUHAJOKI 9070  $\pm$  190  
7120 BC  
Gyttjasilt and silty gyttja, 4.90-4.75 m depth.  
Comment(RS): Isolation of the basin from the Ancylus Lake.  
The minimum age of immigration of Pinus to the area.
- Hel-1364 SPITAALIJÄRVI, ISOJOKI 8250  $\pm$  190  
6300 BC  
62°08'N, 22°10'E, about 175 m a.s.l.  
Muddy dy, 2.525-2.450 m depth.  
Comment(RS): Immigration of Alnus (A<sup>+</sup>) to the area.
- Hel-1365 SPITAALIJÄRVI, ISOJOKI 9020  $\pm$  130  
7070 BC  
Silty gyttja, 2.70-2.60 m depth.  
Comment(RS): Isolation of the basin from the Ancylus Lake.  
The isolation age is probably somewhat too young because  
of a small hiatus in stratigraphy. The minimum age of im-  
migration of Pinus to the area.
- Hel-1366 PIENI HAAPAJÄRVI, SIIKAINEN 6410  $\pm$  150  
4460 BC  
61°58'N, 21°59'E, about 81 m a.s.l.  
Gyttja, 2.62-2.55 m depth.  
Comment(RS): The postisolation age, just after the iso-  
lation.

Hel-1367 PIENI HAAPAJÄRVI, SIIKAINEN 6760  $\pm$  150  
 4810 BC  
 Clay-gyttja, 2.70-2.62 m depth.  
 Comment(RS): Isolation of the basin from the Litorina Sea.  
 The basin is situated very near the highest Litorina shore  
 (clypeus-limit).

Hel-863 - 866 VARRASSUO SERIES Hel-823

Hel-867 KMD/XI(2), LOWASERA, MARSABIT, KENYA 9420  $\pm$  200  
 7470 BC  
 02°56'N, 36°43'E  
 Coll. and subm. 1976 by A. Siiriäinen.  
 Comment(AS): Shells from a beach deposit of Lake Turkana  
 (Rudolf) ca. 74 m above present level (Phillipson 1977).

JÖNSAS SERIES, VANTAA

60°16'N, 24°51'E / 6683.66 N, 547.36 E, 32-35 m a.s.l.  
 Coll. 1972-1973 by P. Purhonen and 1976-1977 by E. Linturi and  
 S. Ojonen. Subm. 1976 and 1977 by T. Edgren and A. Siiriäinen.  
 General comment: For Hel-868, 869, 892-896, 963-965, 985-987,  
 1008, 1044-1050: The dating results refer to the epineolithic  
 habitation at the site. For Hel-1006: The dating result refers  
 to the Corded Ware Culture period at the site. For Hel-1007: The  
 dating result refers to the mesolithic habitation at the site.  
 For Hel-962: AD 930 is younger than expected, samples taken in  
 the same place lower down gave the results referring to the ep-  
 ineolithic period (Purhonen 1980).

Hel-868	JÖNSAS 1975-02	2300 $\pm$ 110 350 BC
	Charcoal from a hearth.	
Hel-869	JÖNSAS 1975-03	2470 $\pm$ 110 520 BC
	Charcoal from a hearth.	
Hel-892	JÖNSAS 1976-01	2250 $\pm$ 110 300 BC
	Charcoal from a hearth.	
Hel-893	JÖNSAS 1976-03	2340 $\pm$ 110 390 BC
	Charcoal from a hearth.	



Hel-894	JÖNSAS 1976-06	2110 $\pm$ 110 160 BC
	Charcoal from a hearth, 0.65-0.75 m depth.	
Hel-895	JÖNSAS 1976-07	2110 $\pm$ 100 160 BC
	Charcoal from a hearth, 0.77-1.02 m depth.	
Hel-896	JÖNSAS 1976-08	2080 $\pm$ 110 130 BC
	Charcoal from a hearth, 1.15 m depth.	
Hel-962	JÖNSAS 1976-09	1020 $\pm$ 120 AD 930
	Charcoal from a hearth, 0.04-0.15 m depth.	
Hel-963	JÖNSAS 1976-10	2420 $\pm$ 130 470 BC
	Charcoal from a hearth, 0.34-0.40 m depth.	
Hel-964	JÖNSAS 1976-11	2320 $\pm$ 100 370 BC
	Charcoal from a hearth, 0.85-0.90 m depth.	
Hel-965	JÖNSAS 1976-12	2280 $\pm$ 110 330 BC
	Charcoal from a hearth, 0.85-0.90 m depth.	
Hel-985	JÖNSAS 1972-01	2860 $\pm$ 110 910 BC
	Charcoal from a hearth, 0.60 m depth.	
Hel-986	JÖNSAS 1972-02	2770 $\pm$ 110 820 BC
	Charcoal from a hearth, 0.60-0.70 m depth.	
Hel-987	JÖNSAS 1973-01	2920 $\pm$ 120 970 BC
	Charcoal from a hearth, 0.50 m depth.	
Hel-1006	JÖNSAS 1977-01	4520 $\pm$ 130 2570 BC
	Charcoal, 0.68-0.78 m depth.	
Hel-1007	JÖNSAS 1977-02	7420 $\pm$ 170 5470 BC
	Charcoal from a hearth, 0.30 m depth.	
Hel-1008	JÖNSAS 1977-03	2580 $\pm$ 120 630 BC
	Charcoal from a hearth, 0.90-1.10 m depth.	

Hel-1044	JÖNSAS 736736	2460 $\pm$ 100 510 BC
	Charcoal from a hearth, 0.79 m depth.	
Hel-1045	JÖNSAS 736736	2730 $\pm$ 100 780 BC
	Charcoal from a hearth, 0.91 m depth.	
Hel-1046	JÖNSAS 736736	2550 $\pm$ 130 600 BC
	Charcoal from a hearth, 0.83 m depth.	
Hel-1047	JÖNSAS 732732	2770 $\pm$ 100 820 BC
	Charcoal from a hearth, about 0.79 m depth.	
Hel-1048	JÖNSAS 728734	2690 $\pm$ 130 740 BC
	Charcoal from a hearth, 0.56 m depth.	
Hel-1049	JÖNSAS 728736-728734	2690 $\pm$ 100 740 BC
	Charcoal from a hearth, 0.96 m depth.	
Hel-1050	JÖNSAS 728732	2690 $\pm$ 100 740 BC
	Charcoal from a hearth, 1.23 m depth.	
Hel-1201	JÖNSAS	2170 $\pm$ 110 220 BC
	766696	
	Charcoal, sample number 4.	
	Subm. 1978 by M. Aalto.	
	Comment(MA): This is an old dwelling site. There was some grains of cereals in this sample. The ceramic evidences, however, indicate older, Stone Age culture. There may be mixing of materials of Early Roman Age and Stone Age cultures.	
Hel-1202	JÖNSAS	330 $\pm$ 140 AD 1620
	766696	
	Charcoal, sample number 6 (bottom).	

Hel-870 PAATSJOEN LUUSUA Hel-798

Hel-1044	JÖNSAS 736736	2460 $\pm$ 100 510 BC
	Charcoal from a hearth, 0.79 m depth.	
Hel-1045	JÖNSAS 736736	2730 $\pm$ 100 780 BC
	Charcoal from a hearth, 0.91 m depth.	
Hel-1046	JÖNSAS 736736	2550 $\pm$ 130 600 BC
	Charcoal from a hearth, 0.83 m depth.	
Hel-1047	JÖNSAS 732732	2770 $\pm$ 100 820 BC
	Charcoal from a hearth, about 0.79 m depth.	
Hel-1048	JÖNSAS 728734	2690 $\pm$ 130 740 BC
	Charcoal from a hearth, 0.56 m depth.	
Hel-1049	JÖNSAS 728736-728734	2690 $\pm$ 100 740 BC
	Charcoal from a hearth, 0.96 m depth.	
Hel-1050	JÖNSAS 728732	2690 $\pm$ 100 740 BC
	Charcoal from a hearth, 1.23 m depth.	
Hel-1201	JÖNSAS	2170 $\pm$ 110 220 BC
	766696	
	Charcoal, sample number 4.	
	Subm. 1978 by M. Aalto.	
	Comment(MA): This is an old dwelling site. There was some grains of cereals in this sample. The ceramic evidences, however, indicate older, Stone Age culture. There may be mixing of materials of Early Roman Age and Stone Age cultures.	
Hel-1202	JÖNSAS	330 $\pm$ 140 AD 1620
	766696	
	Charcoal, sample number 6 (bottom).	

Hel-870 PAATSJOEN LUUSUA Hel-798

Hel-871 LAIKIPIA SERIES Hel-851

Hel-872 IHANANIEMI, SUURIKYLÄ, SYSMÄ 1580  $\pm$  130  
AD 370

61°30'N, 25°40'E

Charcoal, 0.30 m depth.

Coll. 1975 by K. Anttila. Subm. 1976 by A. Siiriäinen.

Comment(AS): An Iron Age burial/offering cairn with fragments of burnt bone (incl. human) and potsherds.

ÄRJENLAMPI SERIES, POSIO

7329.5 N, 548.5 E / 66°04'N, 28°04'E, 247.2 m a.s.l.

Coll. and subm. 1976 by O. Heikkinen.

Ref. Heikkinen and Kurimo (1977).

Hel-873 6670  $\pm$  190  
4720 BC

Coarse gyttja, 2.18-2.22 m depth.

Comment(OH): Above the contact corresponding to isolation from Lake Kitka.

Hel-874 6540  $\pm$  130  
4590 BC

Gyttja, 2.22-2.26 m depth.

Comment(OH): Below the contact corresponding to isolation from Lake Kitka.

Hel-875 KHORDLORTOQ, GREENLAND 880  $\pm$  90  
AD 1070

Charcoal, 0.15 m depth (ruingruppe Ø 38).

Coll. 1976 by T. Edgren.

Comment(TE): The sample comes from a kitchen-midden at the ruincomplex Ø 38 in SW Greenland documented by the Finnish research group of the Scandinavian expedition in 1976. The result is a little older than expected since the ruins of the Khordlortoq-valley are dated to the 13<sup>th</sup> and 14<sup>th</sup> century.

PASKALAMPI SERIES, POSIO

7331.0 N, 548.5 E / 66°04'N, 28°04'E, 244.6 m a.s.l.

Coll. and subm. 1976 by O. Heikkinen.

Ref. Heikkinen and Kurimo (1977).

- Hel-876 6190  $\pm$  170  
4240 BC  
 Coarse gyttja, 2.44-2.48 m depth.  
 Comment(OH): Above the contact corresponding to isolation from Lake Kitka.
- Hel-877 6350  $\pm$  200  
4400 BC  
 Gyttja, 2.48-2.52 m depth.  
 Comment(OH): Below the contact corresponding to isolation from Lake Kitka.
- Hel-878 4840  $\pm$  130  
2890 BC  
 Gyttja, 2.20-2.24 m depth.  
 Comment(OH): Appearance of spruce.

## AALAND SERIES

Samples collected with a piston corer 1975 and subm. 1976 by G. Glückert.

- Hel-879 BREDMOSSEN, GETA 6090  $\pm$  190  
4140 BC  
 60°23'30"N, 19°50'E  
 Sand and gyttja, 1.80 m depth.  
 Comment(GG): Isolation from the Baltic at the end of the Litorina transgression.
- Hel-880 SIGNILDSKRUBBA, GETA 4010  $\pm$  170  
2060 BC  
 60°27'30"N, 19°53'E  
 Gyttja, 2.85 m depth.  
 Comment(GG): Isolation from the Baltic (Litorina Sea).
- Hel-881 TJÄRNBERGSMOSSEN, FAGERVIK, SALTVIK 3890  $\pm$  130  
1940 BC  
 60°20'N, 20°06'E  
 Silty gyttja, 4.60 m depth.  
 Comment(GG): Isolation of the basin from the Baltic, age of shoreline Litorina IV.
- Hel-882 TJÄRNBERGSMOSSEN, FAGERVIK, SALTVIK 2020  $\pm$  130  
70 BC  
 Gyttja, 3.75-3.80 m depth.  
 Comment(GG): General spread of Picea in NE Aaland.

- Hel-897 VÄSTERKLEVSBERGSMOSSEN, SALTVIK 5160  $\pm$  180  
3210 BC  
60°20'N, 20°05'E  
Gyttja, 1.00 m depth.  
Comment(GG): Isolation of the basin from the Baltic, the age of shoreline Litorina II in Aaland.
- Hel-898 ÖDKARBYMOSSEN, SALTVIK 3890  $\pm$  120  
1940 BC  
60°20'N, 19°50'55"E  
Gyttja, 2.10 m depth.  
Comment(GG): Isolation of the basin from the Baltic. Age of shoreline Litorina III in Aaland.
- Hel-899 BLÄCKSMYRA, SUND 2910  $\pm$  140  
960 BC  
60°13'N, 20°05'E  
Gyttja, 1.30 m depth.  
Comment(GG): Isolation of the basin from the Baltic (Litorina Sea).
- Hel-900 SLÄTTMOSSEN, KATBY, HAMMARLAND 3570  $\pm$  170  
1620 BC  
60°13'N, 19°43'E  
Gyttja, 2.50 m depth.  
Comment(GG): Isolation of the basin from the Baltic.
- Hel-920 STÄNGSLEMOSEN, DRAKENBÖLE, HAMMARLAND 1840  $\pm$  110  
AD 110  
60°12'N, 19°45'E  
Gyttja, 1.35 m depth.  
Comment(GG): Isolation from the Baltic. Age of shoreline Litorina VII. Invasion of Picea in SW Aaland.
- Hel-921 STORMOSSEN, DJURVIK, JOMALA 1820  $\pm$  120  
AD 130  
60°08'N, 19°44'E  
Sand and gyttja, 1.60 m depth.  
Comment(GG): Isolation from the Baltic and invasion of Picea in SW Aaland.
- Hel-922 STORMOSSARNA, FLAKA, LEMLAND 2190  $\pm$  110  
240 BC  
60°02'30"N, 20°09'E  
Gyttja, 1.10 m depth.  
Comment(GG): Isolation of the basin from the Baltic.

## AHMASJÄRVI SERIES, UTAJÄRVI

64°39'N, 26°27'E, 98.5 m a.s.l.

Coll. with a Livingstone sampler and subm. 1976 by C. Reynaud.

Ref. Reynaud and Hjelmroos (1980).

Hel-883 6930  $\pm$  230  
4980 BC

Gyttja, 2.10-2.18 m depth below sediment surface.

Comment(CR): Grazing phase.

Hel-884 4740  $\pm$  150  
2790 BC

Gyttja, 1.16-1.23 m depth.

Comment(CR): Spruce immigration.

Hel-885 4120  $\pm$  150  
2170 BC

Gyttja, 0.83-0.90 m depth.

Comment(CR): Starting point of the "Cerealia" curve.

Hel-946 5540  $\pm$  190  
3590 BC

Gyttja, 1.40-1.48 m depth.

Comment(CR): Grazing phase.

Hel-947 3240  $\pm$  180  
1290 BC

Gyttja, 0.41-0.46 m depth.

## JÄRVELÄNJÄRVI SERIES, VIHANTI

64°33'N, 24°47'E, 100 m a.s.l.

Coll. with a Livingstone sampler and subm. 1976 by C. Reynaud.

Ref. Reynaud and Hjelmroos (1980).

Hel-886 5640  $\pm$  190  
3690 BC

Gyttja, 1.69-1.72 m depth.

Comment(CR): First pollen of *Plantago lanceolata*.

Hel-887 4830  $\pm$  170  
2880 BC

Gyttja, 0.74-0.84 m depth.

Comment(CR): Spruce immigration.

Hel-948 5270  $\pm$  170  
3320 BC

Gyttja, 1.25-1.30 m depth.

Comment(CR): Grazing phase.

Hel-949 5250  $\pm$  180  
3300 BC

Gyttja, 1.06-1.16 m depth.

Hel-950 5440  $\pm$  180  
3490 BC

Gyttja, 1.56-1.60 m depth.

Comment(CR): Grazing phase.

Hel-951 4120  $\pm$  190  
2170 BC

Gyttja, 0.56-0.64 m depth.

Comment(CR): Spruce maximum.

Hel-960 5850  $\pm$  190  
3900 BC

Gyttja, 1.85-1.89 m depth.

Comment(CR): Forest immigration.

#### KIIMAJÄNKÄ SERIES, KEMI

65°59'N, 24°38'E, 40 m a.s.l.

Coll. with a Russian corer and subm. 1976 by C. Reynaud.

Ref. Reynaud and Hjelmroos (1980).

Hel-888 2590  $\pm$  140  
640 BC

Peat, 1.36-1.32 m depth.

Comment(CR): Beginning of the forest clearance.

Hel-955 1630  $\pm$  130  
AD 320

Peat, 0.51-0.57 m depth.

Comment(CR): Pollen of flax.

Hel-956 1260  $\pm$  140  
AD 690

Peat, 0.38-0.40 m depth.

Comment(CR): Decrease of spruce.

Hel-961 2180  $\pm$  150  
230 BC

Peat, 0.75-0.79 m depth<sup>t</sup>.

Comment(CR): Clearance phase maximum.



Hel-889 OULANKA

160  $\pm$  90  
AD 1790

Wood

Hel-890 VÖYRI

195  $\pm$  80  
AD 1755

The outdoor museum of Vörå (Vöyri), Ostrobothnia.

Coll. 1972 by L-E. Förrars.

Subm. 1976 by B. Lönnqvist.

Comment(BL): Coffin of mediaeval type (15<sup>th</sup> century). Supposed to be remnant from the end of the 15<sup>th</sup> century (the old Church of Vörå), but will presumably have been made in the 18<sup>th</sup> century with pattern from an older coffin (long ago perished) in mediaeval style from which the iron escutcheons have been removed to the sample examined.

Hel-891 KOKKOJÄRVI, MANAMANSALO, VAALA

140  $\pm$  110  
AD 1810

64°23'N, 27°03'E, 111-113 m a.s.l.

Juniper wood, 13-15 m depth.

Coll. 1976 by P. Vuolteenaho.

Subm. 1976 by J. Alestalo.

Hel-892 - 896 JÖNSAS SERIES Hel-868

Hel-897 - 900 AALAND SERIES Hel-879

## DISKO SERIES, WEST GREENLAND

Coll. and subm. 1976 by J. Donner.

Comment(JD): Dates of shells and one date of peat were used to date Holocene land/sea level changes and deglaciation especially in Disko (Donner 1978).

Hel-901 NORDFJORD

7980  $\pm$  150  
6030 BC

69°56'N, 54°17'W, 11.2 m above present

 $\delta^{13}C = +0.8$  ‰

Balanus line.

Mya truncata (GGU no 152801).

Shells from upper part of marine silty sand and gravel underneath shingle in gliff section of terrace at 21.4 m.

- Hel-902 UNGUSSIVIK, NIPISAT 4780  $\pm$  120  
2830 BC  
69°27'N, 54°14'W, 8.7 m above present  $\delta^{13}C = +1.4$  ‰  
Balanus line.  
*Mytilus edulis* (GGU no 152802).  
Shells from marine sand in 3 m deep stream section with  
1.5 m eolian sand without shells at surface.
- Hel-903 QIVITUT 8020  $\pm$  170  
6070 BC  
69°26'N, 53°42'W, 6.8 m above present  $\delta^{13}C = +1.8$  ‰  
Balanus line.  
*Mya truncata* (GGU no 152803).  
Shells from upper 0.5 m of stony clay on slope by stream  
W of peninsula.
- Hel-904 QIVITUT 6760  $\pm$  150  
4810 BC  
69°27'N, 53°40'W, 18.7 m above present  $\delta^{13}C = +2.1$  ‰  
Balanus line.  
*Mya truncata* (GGU no 152804).  
Shells from upper 0.5 m of sand and gravel of ridgelike  
accumulation between two gneiss outcrops on N end of  
peninsula.
- Hel-905 IKINEQ 6840  $\pm$  140  
4890 BC  
69°29'N, 53°38'W, 3.3 m above present  $\delta^{13}C = +1.5$  ‰  
Balanus line.  
*Mya truncata* (GGU no 152805).  
Shells from upper 0.5 m of stony gravel of small ridge  
between gneiss outcrops on S point of peninsula.
- Hel-906 IKINEQ 8250  $\pm$  170  
6300 BC  
69°29'N, 53°38'W, 40.3 m above present  $\delta^{13}C = +2.0$  ‰  
Balanus line.  
*Mya truncata* (GGU 152806).  
Shells from upper 0.5 m of stony gravel of small ridge  
between gneiss outcrops N of peninsula.
- Hel-907 IKINEQ 8270  $\pm$  170  
6320 BC  
69°29'N, 53°38'W, 21.6 m above present  $\delta^{13}C = +4.5$  ‰  
Balanus line.

*Mya truncata* (GGU no 152807).

Shells from upper 0.5 m of stony gravel of small ridge between gneiss outcrops N of peninsula (close to site above).

Hel-945 IKINEQ

970  $\pm$  110  
AD 980

69°29'N, 53°38'W, 0.3 m above present

Balanus line.

Dark peat, 0.2-0.3 m depth on stony beach sand and underneath 0.2 m sandy peat on present beach, on S point of peninsula (near sample Hel-905).

Hel-908 - 911 VARRASSUO SERIES Hel-823

Hel-912 - 919 SUBFOSSIL PINE SERIES Hel-807

Hel-920 - 922 AALAND SERIES Hel-879

Hel-923 - 928 VARRASSUO SERIES Hel-823

Hel-929 OULANKA SERIES Hel-854

Hel-930 KUKONMYLLY, RISTIINA

680  $\pm$  130  
AD 1270

61°26'N, 27°33'E

Wood from a trunk below water level.

Coll. and subm. 1976 by V. Lappalainen.

HÄNNISENLAMPI SERIES, KITEE

62°05'N, 30°12'E

Coll. 1975 by J. Vuorinen and P. Huttunen with Russian corer.

Subm. 1976 by J. Vuorinen.

Hel-931

1270  $\pm$  140  
AD 680

Mud, 1.32-1.37 m depth.

Comment(JV): About 600 years older than by varve counts.

- Hel-932 1530  $\pm$  140  
AD 420  
Mud, 1.43-1.48 m depth.  
Comment(JV): About 600 years older than by varve counts.
- Hel-939 2220  $\pm$  130  
270 BC  
Gyttja, 0.64-0.69 m depth.  
Comment(JV): Cultural sediment, radiocarbon age is about 2000 years older than that obtained from varve counts.
- Hel-940 3230  $\pm$  160  
1280 BC  
Mud, 2.17-2.23 m depth.  
Comment(JV): About 350 years older than by varve counts.
- Hel-941 5870  $\pm$  150  
3920 BC  
Mud, 3.02-3.08 m depth.  
Comment(JV): About 600 years older than by varve counts.

#### HIILISUO SERIES, KARELIAN ASSR, USSR

About 61°45'N, 34°20'E, 147 m a.s.l.

Gyttja and peat samples from various levels of the bottom parts of Hiilisuo (east-central part of it, to the north of a little tarn), Prionega distr., SE of Petrozavodsk.

Coll. 1974 by Y. Vasari, together with N.I. Pyavchenko and other members of the Institute of Biology, Karelian Branch of USSR Academy of Sciences, using a Russian peat sampler.

The samples were composite of equivalent sections in several cores. Subm. 1976 by Y. Vasari.

General comment(YV): The datings do not fit mutually in chronological order. Together they prove convincingly, however, the Early Boreal age of the bottom part of Hiilisuo on this place. Pollenanalytically, the basal peat could have been of Late-glacial origin, as earlier suggested by Donner (1951). The new result is in agreement with the concept of Soviet scientists and their dating (Liiva et al. 1979: 8530 $\pm$ 80 (TA-955), Elina 1981, pp. 82-85).

- Hel-933 9070  $\pm$  190  
7120 BC  
Coarse gyttja, 6.00-5.90 m depth.  
Comment(YV): Beginning of organic deposition on this place.
- Hel-934 8090  $\pm$  180  
6140 BC  
Equisetum-Bryales peat, 5.60-5.50 m depth.
- Hel-942 8880  $\pm$  180  
6930 BC  
Equisetum-Bryales peat, 5.22-5.12 m depth.
- Hel-943 8610  $\pm$  180  
6660 BC  
Bryales peat, 4.92-4.82 m depth.
- Hel-1020 8790  $\pm$  220  
6840 BC  
Equisetum-Bryales peat, 5.90-5.80 m depth.
- Hel-935 - 937 OULANKA SERIES Hel-854
- Hel-938 PERÄPOHJOLA SERIES Hel-781
- Hel-939 - 941 HÄNNISENLAMPI SERIES Hel-931
- Hel-942 - 943 HIILISUO SERIES Hel-933
- Hel-944 PELLO 6590  $\pm$  230  
4640 BC  
66°48'N, 24°00'E, about 100 m a.s.l.  
Wood, 3.00 m depth.  
Coll. 1976 by the local master builder (P. Korteniemi).  
Subm. by Y. Vasari.  
Comment(YV): Dated to check the age of this wood found in  
3 m depth in the river terrace, about 50 m from the present  
river valley. The age suggests shifts in the course of the  
River Tornio.
- Hel-945 DISKO SERIES Hel-901
- Hel-946 - 947 AHMASJÄRVI SERIES Hel-883

Hel-948 - 951 JÄRVELÄNJÄRVI SERIES Hel-886

## VANAJAVESI SERIES

61°10'N, 24°20'E

Coll. 1976 and 1977 by I. Vuorela and M. Eronen with a Livingstone sampler. Subm. 1977 and 1978 by I. Vuorela.

Ref. Vuorela (1980).

Hel-952 3110  $\pm$  140  
1160 BC

Gyttja, 0.70-0.80 m depth.

Comment(IV): The beginning of the Juniperus phase. The date is considerably older than that of the corresponding phase at the adjacent bog (cf. Hel-814, 816).

Hel-953 3120  $\pm$  140  
1170 BC

Gyttja, 1.40-1.50 m depth.

Comment(IV): The earliest occurrence of Cerealia. The date is about 1000 years older than the corresponding one in the adjacent Lake Armijärvi.

Hel-1031 3170  $\pm$  140  
1220 BC

Silty gyttja, 0.35-0.45 m depth.

Comment(IV): An increase in Cerealia pollen curve. The date is considerably too old (cf. Hel-509).

Hel-1032 3670  $\pm$  110  
1720 BC

Silty gyttja, 0.90-1.00 m depth.

Comment(IV): Start of the continuous Cerealia curve. The date is considerably older than expected.

Hel-1142 4490  $\pm$  100  
2540 BC

Gyttja, 5.20-5.30 m depth (water depth 1.5 m).

Comment(IV): Rise in the Picea curve ( $Pc^+$ ). The date is probably too old (cf. Hel-511).

Hel-1197 3030  $\pm$  120  
1080 BC

Silty gyttja, 2.55-2.70 m depth (water depth 1.5 m).

Comment(IV): Start of continuous Cerealia curve. Contamination by older organic material possible (cf. Hel-509).

- Hel-1198 2990  $\pm$  130  
1040 BC  
Silty gyttja, 3.30-3.40 m depth.  
Comment(IV): First Cerealia pollen (cf. Hel-510).
- Hel-1199 2600  $\pm$  120  
650 BC  
Humic fraction of sample Hel-1197.
- Hel-1200 2610  $\pm$  140  
660 BC  
Humic fraction of sample Hel-1198.
- Hel-954 MIEHIKKÄLÄ modern  
Seeds of Lotus Corniculatus.  
Subm. 1977 by R. Ruuhijärvi.
- Hel-955 - 956 KIIMAJÄNKÄ SERIES Hel-888  
ISOKORPI SERIES, RUOTSINKYLÄ, TUUSULA  
Coll. and subm. 1976 by H. Haila.
- Hel-957 ISOKORPI 21 8710  $\pm$  200  
6760 BC  
6694.268 N, 556.652 E, 52 m a.s.l.  
Peat, 1.00-1.05 m depth.  
Comment(HH): The beginning of peat growth, giving the  
maximum age for the isolation from the Ancylus Lake.
- Hel-958 ISOKORPI 30 6270  $\pm$  160  
4320 BC  
6694.402 N, 556.924 E, 52 m a.s.l.  
Roots of Alnus glutinosa, 1.20-1.50 m depth.  
Comment(HH): Subfossil roots of Alnus glutinosa (in situ  
position).
- Hel-959 HELSINKI 360  $\pm$  120  
AD 1590  
Human bone, 1.70 m depth.  
Coll. 1976 by K. Rissanen.
- Hel-960 JÄRVELÄNJÄRVI SERIES Hel-886
- Hel-961 KIIMAJÄNKÄ SERIES Hel-888
- Hel-962 - 965 JÖNSAS SERIES Hel-868

## BRÄNNSKOGEN SERIES, PETALAX

62°45'N, 21°20'E, 25-26 m a.s.l.

Coll. 1976 by M. Miettinen. Subm. 1976 by A. Siiriäinen.

General comment(MM): A epineolithic dwelling site from which pottery of Morby style has been found. The dates are in agreement with the archaeological interpretations.

Hel-966 2910  $\pm$  140  
960 BC

Charcoal, 0.29 m depth.

Hel-967 2890  $\pm$  130  
940 BC

Charcoal, 0.66 m depth.

Hel-968 GRANLIDEN, SIDBÄCK, PÖRTOM 5580  $\pm$  140  
3630 BC

62°40'N, 21°40'E, 67.15 m a.s.l.

Charcoal from a hearth (bottom), 0.43 m depth.

Coll. 1976 by M. Miettinen. Subm. 1976 by A. Siiriäinen.

Comment(MM): The sample is from a huge Stone Age dwelling site. The result is in agreement with the date obtained from land uplift. Pottery of the Jäkärälä style or the II Comb Ceramic period were found on the site.

## NEREŚL, NAREW VALLEY, NE-POLAND

53°12'N, 22°47'E, 105.5 m a.s.l.

Coll. 1976 by J. Grzybowski. Subm. 1977 by O. Heikkinen.

General comment(JG): The excavation is situated near the present mouth of the river Nereśl to the river Narew. The river Nereśl flows in the new channel for about 25 years. The new channel was cut during the melioration work in the valley. The excavation is situated near the boundary of the flood plain and the higher terrace. In the northern part of the excavation very fine river sands were found. Above river deposits fossil trunks and branches were found (*Pinus silvestris*). They are covered by eolian sands of thickness of about 2 m. Trunks are certainly in situ and they have not any connection with present river deposits and present vegetation.

Data obtained for two trunks within artefacts found in the neighboring area, the analysis of stratigraphy and historical



literature make possible to identify the following periods of eolian activity in the Holocene: 1) 4000-1600 BC, 2) 1200-1600 AD, 3) since about 1800 till nowadays (Grzybowski 1981, Grzybowski and Heikkinen 1980).

Hel-969 NEREŚL I 830  $\pm$  150  
AD 1120

Wood, 2 m depth.

Hel-970 NEREŚL 1200  $\pm$  130  
AD 850

Wood, 2 m depth.

Hel-971 YLI-ANTTILA, LESTIJÄRVI 2050  $\pm$  100  
100 BC

63°29'N, 24°48'E

Charcoal KM 17487:55, about 0.30 m depth.

Coll. 1977 by V. Luho. Subm. 1977 by A. Siiriäinen.

Ref. Siiriäinen (1979).

Comment(AS): Charcoal from a hearth on a site with a Late Bronze Age spear head and pottery. The dating result is slightly younger than expected (see Hel-972).

Hel-972 KUUTAMA, SÄÄMÄJÄRVI 2500  $\pm$  110  
550 BC

62°05'N, 33°00'E

Charcoal, about 0.20 m depth.

Coll. 1976 by H. Hyvärinen, M. Saarnisto and A. Siiriäinen.

Subm. 1977 by A. Siiriäinen.

Comment(AS): A charcoal concentration in the cultural layer of a Eastern Karelian site with Early Metal Age textile pottery (see Hel-971).

#### PALSA SERIES, NORTHERN FINLAND

Coll. 1976 and 1977 and subm. 1977 by M. Seppälä.

The samples belong to the dating series of the formation of palsas.

Hel-973 LEPP-1, UTSJOKI 340  $\pm$  110  
AD 1610

69°40'N, 27°08'E

Peat from the surface of a palsa.

- Hel-974 RISKASKAMA, VUOTSO, SODANKYLÄ 3600  $\pm$  140  
1650 BC  
68°02'N, 27°15'E  
Peat, 0.25 m depth.  
Comment(MS): The dating belongs to a series of datings  
of the top peat found on many fells in Finnish Lapland.  
An earlier dating (Hel-144) has been published by  
Seppälä (1972).
- Hel-1038 SKALLOVAARA, UTSJOKI 1210  $\pm$  110  
AD 740  
69°49'N, 27°08'E  
Peat (from a palsa), 0.00-0.01 m depth.
- Hel-1039 SKALLOVAARA, UTSJOKI 1630  $\pm$  130  
AD 320  
Peat (from a palsa), 0.00-0.01 m depth.
- Hel-1040 SKALLOVAARA, UTSJOKI 1070  $\pm$  90  
AD 880  
Peat (from a palsa), 0.00-0.01 m depth.
- Hel-1041 SKALLOVAARA, UTSJOKI 840  $\pm$  100  
AD 1110  
Peat, 0.00-0.01 m depth.
- Hel-1042 ALAKILPISJÄRVI 1970  $\pm$  100  
20 BC  
68°56'N, 20°55'E  
Peat, about 0.30 m depth.

#### MASEHJAURI SERIES, ENONTEKIÖ

69°03'N, 20°29'E, 680 m a.s.l.  
Coll. 1976 by H. Hyvärinen, M. Saarnisto and M. Eronen with a  
Livingstone sampler. Subm. 1977 by H. Hyvärinen.  
General comment(HH): The series relates to studies in tree-  
line history and Flandrian pollen stratigraphy in N Fennoscand-  
ia. The results appear somewhat too old throughout. The top-  
most sediment yielded an age of 1680 $\pm$ 110 (Hel-1037), although  
no gaps is apparent from the pollen record. A possible explana-  
tion is the hard water effect. There are palaeozoic calcareous  
rocks nearby immediately to the west of the site.

Hel-975	9690 $\pm$ 220 7740 BC
Gyttja, 1.40-1.47 m depth.	
Hel-976	8260 $\pm$ 170 6310 BC
Gyttja, 1.10-1.20 m depth.	
Hel-977	5770 $\pm$ 170 3820 BC
Gyttja, 0.80-0.90 m depth.	
Hel-978	3740 $\pm$ 130 1790 BC
Gyttja, 0.50-0.60 m depth.	
Hel-979	2620 $\pm$ 140 670 BC
Gyttja, 0.18-0.32 m depth.	
Hel-1037	1680 $\pm$ 110 AD 270
Gyttja, 0.00-0.10 m depth.	

PETROSKOI, USSR

62°10'N, 32°50'E, 190-200 m a.s.l.

Coll. 1976 by H. Hyvärinen, M. Saarnisto and A. Siiriäinen with a Hiller sampler. Subm. 1977 by H. Hyvärinen.

Hel-980 LAMPI III A 11390  $\pm$  190

Silty gyttja, 5.35-5.45 m depth.

Comment(HH): The sample represents the basal organic sediment in a lake sediment section. Pollen stratigraphically the sample is from the lower part of the Artemisia Zone, expected to be of Younger Dryas age.

Hel-981 LAMPI III B 10300  $\pm$  180

Coarse gyttja, 4.85-4.95 m depth.

Comment(HH): The sample dates the lower part of the Birch Zone, underlain by the Artemisia Zone, expected to correspond to the Flandrian/Weichselian transition.

## VALKIAJÄRVI SERIES, RUOVESI

61°54'N, 23°53'E, 110.1 m a.s.l.

Subm. 1977 and 1978 by M. Saarnisto.

General comment(MS): The sediments of Lake Valkiajärvi were sampled 1975 and 1976 by M. Saarnisto (continuous 90 mm diameter cores Va-75 and Va-76) from its deepest part, below 25 m of water, where the organic sediment sequence is nearly 3 metres in thickness. The sediment is consistently laminated throughout its entire length and contains ca 8700 varves. The following determinations were made in order to compare radiocarbon and varve dates. The samples used for radiocarbon dating are taken from cores connected to the core, from which the varves are counted, through pollen analytical and stratigraphic methods. The depths of Va-75 and Va-76 are not directly comparable. The deviations are partly expected partly unexpected and inconsistent for unknown reasons. One explanation may be contamination of the samples by  $^{14}\text{C}$  used for labeling at the Lammi Biological Station. Radiocarbon dates from the varve core have been obtained later (Hel-1441 - 1454). See also Hel-194 - 196 (Jungner 1979). Ref. Hjelmroos (1979), Saarnisto (1981).

Hel-982	Va-75	5540 $\pm$ 180 3590 BC
Laminated mud, 1.15-1.20 m depth.		
Hel-983	Va-75	6850 $\pm$ 210 4900 BC
Laminated mud, 1.60-1.65 m depth.		
Hel-1021	Va-75	8350 $\pm$ 170 6400 BC
Laminated mud, 2.51-2.61 m depth.		
Hel-1022	Va-76	690 $\pm$ 110 AD 1260
Laminated mud, 0.24-0.34 m depth.		
Hel-1023	Va-75	7780 $\pm$ 160 5830 BC
Laminated mud, 2.085-2.185 m depth.		

Hel-1024	Va-76	3050 $\pm$ 140 1100 BC
Laminated mud, 1.135-1.193 m depth.		
Hel-1114	Va-76	1980 $\pm$ 90 30 BC
Laminated mud, 0.645-0.745 m depth.		
Hel-1115	Va-76	1550 $\pm$ 120 AD 400
Laminated mud, 0.85-0.95 m depth.		
Hel-1116	Va-76	4790 $\pm$ 130 2840 BC
Laminated mud, 1.67-1.73 m depth.		
Hel-1117	Va-76	7310 $\pm$ 110 5360 BC
Laminated mud, 2.06-2.12 m depth.		
Hel-1118	Va-76	8140 $\pm$ 120 6190 BC
Laminated mud, 2.31-2.37 m depth.		
Hel-1119		modern
The humic fraction of Hel-1114.		$d^{14}C = +8.0 \%$
Hel-1120		1000 $\pm$ 100 AD 950
The humic fraction of Hel-1115.		
Hel-1121		3100 $\pm$ 120 1150 BC
The humic fraction of Hel-1116.		
Hel-1122		6820 $\pm$ 110 4870 BC
The humic fraction of Hel-1117.		
Hel-1123		7440 $\pm$ 120 5490 BC
The humic fraction of Hel-1118.		
Hel-984	PERÄPOHJOLA SERIES	Hel-781
Hel-985 - 987	JÖNSAS SERIES	Hel-868
Hel-988	OULANKA SERIES	Hel-854

## MUKKAVAARAN LAMPI SERIES, ENONTEKIÖ

68°55'N, 21°00'E, 535 m a.s.l.

Coll. 1976 by H. Hyvärinen, M. Eronen and M. Saarnisto with a Livingstone sampler. Subm. 1977 by H. Hyvärinen.

General comment(HH): The sample series relates to studies in tree-line history and Flandrian pollen stratigraphy in N Fennoscandia. The basal samples appear too old relative to the deglaciation history. Two control samples from the lower part of the core were dated for soluble (humus) and insoluble fraction (Hel-1069, 1070 and Hel-1071, 1072) however the ages obtained for the different fractions do not differ significantly.

The dates obtained for the immigration of pine (7500-7000 BP, interpolated) and for the retreat of pine (4500-5000 BP) are consistent with other dates from Lapland.

Ref. Eronen and Hyvärinen (1981).

Hel-989	9960 $\pm$ 190 8010 BC
Gyttja, 2.60-2.65 m depth.	
Hel-990	8430 $\pm$ 160 6480 BC
Gyttja, 2.30-2.35 m depth.	
Hel-991	6130 $\pm$ 190 4180 BC
Gyttja, 2.00-2.05 m depth.	
Hel-992	4930 $\pm$ 190 2980 BC
Gyttja, 1.65-1.70 m depth.	
Hel-993	3530 $\pm$ 150 1580 BC
Gyttja, 1.10-1.20 m depth.	
Hel-1069	9040 $\pm$ 140 7090 BC
Gyttja, 2.40-2.55 m depth.	
Hel-1070	8890 $\pm$ 190 6940 BC
The humic fraction of Hel-1069.	
Hel-1071	7480 $\pm$ 140 5530 BC
Gyttja, 2.10-2.25 m depth.	

Hel-1072

7040  $\pm$  150  
5090 BC

The humic fraction of Hel-1071.

## LAKE NAIVASHA SERIES, KENYA

0°45'S, 36°22'E

Coll. and subm. 1976 by A. Siiriäinen.

Comment(AS): A site with Pastoral "Neolithic" pottery, one of the earliest occurrences of domesticates (cattle, sheep/goat) in East Africa. Ref. Onyango-Abudje (1977).

Hel-994 CRESCENT ISLAND 21/4

2920  $\pm$  110  
970 BC

Bone, 0.30 m depth.

Hel-995 CRESCENT ISLAND 21/6

3130  $\pm$  120  
1180 BC

Bone, 0.40 m depth.

## LAMMASLAMPI SERIES, VANTAA

60°16'N, 24°48'E, 31.8 m a.s.l.

Subm. 1977 by M. Eronen.

Ref. Alhonen et al. (1978).

Hel-996

7740  $\pm$  170  
5790 BC

Mud, 6.60-6.75 m below water surface.

Comment(ME): Diatom analysis indicates that the dated clayey mud layer belongs to the slightly saline Mastogloia phase of the Baltic.

Hel-997

7450  $\pm$  160  
5500 BC

Mud, 6.30-6.40 m below water surface.

Comment(ME): The level 6.30 m is the beginning of the brackish water Clypeus-flora in the diatom stratigraphy. The dated sample is just below that boundary. The level 6.40 m means the beginning of a continuous Tilia curve in the pollen diagram.

Hel-998

7310  $\pm$  170  
5360 BC

Mud, 6.20-6.30 m below water surface.

Comment(ME): The lowermost Litorina Sea sediment, just above the Clypeus-limit in the diatom stratigraphy.

Hel-999 6550  $\pm$  170  
4600 BC  
Mud, 5.90-5.80 m depth below water surface.

Comment(ME): Most of the brackish-water diatoms disappear in the diatom stratigraphy. That means the isolation of the basin from the Litorina Sea.

Hel-1000 6160  $\pm$  160  
4210 BC  
Mud, 5.60-5.50 m below water surface.

Comment(ME): The final disappearance of brackish-water diatoms which were living in the basin after its isolation from the Litorina Sea.

#### SAMPLES FROM LOGBOATS OF DIFFERENT TYPES

Coll. 1976 by E. Naskali. Subm. 1977 by A. Siiriäinen.

Hel-1001 VALKOLAMPI, KIRKKONUMMI 410  $\pm$  110  
AD 1540  
Wood

Comment(AS): Dugout from one log.

Hel-1002 KOLMIKULMALAMPI, ESPOO 720  $\pm$  90  
AD 1230  
Wood

Comment(AS): Dugout from one log.

Hel-1003 NYÄKER, SNAPPERTUNA 690  $\pm$  100  
AD 1260  
Wood, about 0.50 m depth.

Comment(AS): Dugout of a composite type.

Hel-1004 JÄRVENSUO, HUMPPILA 4210  $\pm$  140  
2260 BC

Coll. 1976 by E. Naskali.

Subm. 1977 by A. Siiriäinen.

Wood, about 1 m depth.

Comment(AS): A sample from a paddle found in a bog from a depth of ca. 1 m.



## KOIRALAMMINSUO SERIES, LAMMINSALO, RÄÄKKYLÄ

62°16'N, 29°42'E

Coll. 1976 by M. Huurre and E. Naskali.

Subm. 1977 and 1978 by A. Siiriäinen.

General comment(AS): Samples from a sewn boat found in a bog from a depth of ca. 0.5 m.

Ref. Naskali (1979).

Hel-1005

820 ± 130  
AD 1130

Wood

Comment(AS): A sample from one side board.

Hel-1093

780 ± 100  
AD 1170

Comment(AS): A sample of a withe.

Hel-1006 - 1008 JÖNSAS SERIES Hel-868

## PIENI NÄÄTÄLAMPI SERIES, KUUSAMO

65°48'N, 29°43'E, 293 m a.s.l.

Gyttja samples from various levels of the lake bottom deposits. Coll. 1976 from the ice using a piston sampler and subm. 1976 by Y. Vasari and T. Mikkonen.

The purpose of the samples was to date the vegetational succession at this site, known from earlier work (Vasari 1962).

The ages obtained are consistently higher than expected, probably due to the hard water effect.

Hel-1009

10140 ± 180

Gyttja, 2.70-2.55 m depth, composite of equivalent levels in two replicate cores.

Comment(YV): End of local Lateglacial vegetational phase.

Hel-1010

10000 ± 230

Gyttja, 2.40-2.15 m depth, composite of equivalent stratigraphic levels in two replicate cores.

Comment(YV): Boundary between Birch and Pine maxima.

Hel-1011

6780  $\pm$  210  
4830 BC

Gyttja, 1.55-1.45 m depth.

Comment(YV): Spread of Picea (Pc<sup>+</sup>).

## RAJALAMPI SERIES, KUUSAMO

65°49'N, 29°40'E, 258 m a.s.l.

Gyttja samples from various levels of the lake bottom.

Coll. 1976 from the ice using a piston sampler by Y. Vasari and T. Mikkonen. Subm. 1976 by Y. Vasari.

The purpose of these samples was to date the vegetational succession at this site known from earlier work (Vasari 1962) and compare it with the results from near-by Pieni Näättälampi, 3 km from this place.

Hel-1012

9210  $\pm$  170  
7260 BC

Gyttja, 3.75-3.65 m depth, composite of equivalent stratigraphic levels in two replicate cores.

Comment(YV): Date for the early Holocene pine maximum.

Roughly 1500 years older than supposed. Hard water effect?

Hel-1013

7980  $\pm$  210  
6030 BC

Gyttja, 3.50-3.40 m depth.

Comment(YV): Beginning of the Hypsithermal. About 1500 years older than originally supposed, possibly due to hard water effect.

Hel-1014

6130  $\pm$  150  
4180 BC

Gyttja, 3.15-3.05 m depth, composite of equivalent stratigraphic levels in two replicate cores.

Comment(YV): Date for immigration of spruce, somewhat older (about 650 years) than supposed. Slightly younger than the corresponding horizon in the more easterly Pieni Näättälampi series.

Hel-1015

4860  $\pm$  180  
2910 BC

Gyttja, 2.65-2.55 m depth, composite of equivalent levels in two replicate cores.

Comment(YV): Date for the beginning of the climatic deterioration. Fits reasonably well with earlier concepts.

### HÖYTIÄINEN SERIES

Samples from different sites around Lake Höytiäinen.

Coll. and subm. 1977 and 1978 by H. Vesajoki.

- Hel-1016 VIIEVÄNNIEMI, HÖYTIÄINEN 6400  $\pm$  160  
4450 BC  
 62°45'45"N, 29°49'40"E, 87.5 m a.s.l.  
 Plant remains in silty sand, 0.50-0.60 m depth.  
 Comment(HV): Possibly redeposited material in an accumulation shore terrace.
- Hel-1017 VIIEVÄNNIEMI, HÖYTIÄINEN 7390  $\pm$  200  
5440 BC  
 Wood remains in silty sand.  
 Comment(HV): Possibly redeposited material in an accumulation shore terrace.
- Hel-1018 SÄYNEPURO, HÖYTIÄINEN 6490  $\pm$  210  
5450 BC  
 62°57'N, 29°39'E, 96 m a.s.l.  
 Plant remnants in mud, 1 m depth.  
 Comment(HV): Exposed lake bottom (Vesajoki 1980).
- Hel-1019 SÄYNEPURO, HÖYTIÄINEN 4640  $\pm$  180  
2690 BC  
 Peat, 0.5 m depth.  
 Comment(HV): Exposed lake bottom (Vesajoki 1980).
- Hel-1033 VIIEVÄNNIEMI, HÖYTIÄINEN 5040  $\pm$  120  
3090 BC  
 Wood remains in silty sand.  
 Comment(HV): Possibly redeposited material in an accumulation shore terrace.
- Hel-1034 SUONIEMI, HÖYTIÄINEN 5990  $\pm$  130  
4040 BC  
 62°56'00"N, 29°40'30"E, 98.5 m a.s.l.  
 Peat below sand, 1.8 m depth.  
 Comment(HV): An abandoned beach ridge of Lake Höytiäinen.
- Hel-1035 SUONIEMI, HÖYTIÄINEN 650  $\pm$  110  
AD 1300  
 Wood below sand, 1.2 m depth.

Comment(HV): A pine stump in situ buried by aeolian sand (Vesajoki 1980).

Hel-1036 ANÄKKÄLÄNNIEMI, HÖYTIÄINEN 8610  $\pm$  180  
6660 BC

62°59'00"N, 29°38'10"E, 96.5 m a.s.l.

Wood below sand, 1.0 m depth.

Comment(HV): A pine stump buried by transgressive beach sand.

Hel-1136 TIAISSUO 1, POLVIJÄRVI 8850  $\pm$  130  
6900 BC

62°56'N, 29°26'E, 100.5 m a.s.l.

Coarse detritus gyttja, 2.45-2.47 m depth.

Comment(HV): The beginning of organic sedimentation following the isolation of Höytiäinen to an independent lake (Vesajoki 1980).

Hel-1137 TIAISSUO 1, POLVIJÄRVI 8680  $\pm$  130  
6730 BC

Peat, 2.35-2.37 m depth.

Comment(HV): The basal part of terrestrial peat (Vesajoki 1980).

Hel-1138 TIAISSUO 2, POLVIJÄRVI 9570  $\pm$  130  
7620 BC

62°56'20"N, 29°27'E, 100 m a.s.l.

Coarse detritus gyttja, 3.65-3.75 m depth.

Comment(HV): Beginning organic sedimentation indicating the isolation of Höytiäinen to an independent lake. A slight ageing effect of graphite is possible (Vesajoki 1980).

Hel-1139 TIAISSUO 2, POLVIJÄRVI 8820  $\pm$  130  
6870 BC

Dy, 3.10-3.20 m depth.

Comment(HV): Isolation of the mire pool from Lake Höytiäinen (Vesajoki 1980).

Hel-1144 RAPALAHTI 4, KONTIOLAHTI 9380  $\pm$  120  
7430 BC

62°46'N, 29°35'30"E, 92 m a.s.l.

Clay mud, 1.60-1.65 m depth.

Comment(HV): Beginning organic sedimentation indicating the isolation of Höytiäinen to an independent lake. A slight ageing effect of graphite is possible (Vesajoki 1980).

Hel-1145 RAPALAHTI 4, KONTIOLAHTI 9120  $\pm$  170  
7170 BC

Mud, 1.45-1.50 m depth.

Comment(HV): The minimum age for the isolation of Lake Høytiäinen. Possibility of a slight ageing effect of graphite is still present (Vesajoki 1980).

Hel-1146 RAPALAHTI, KONTIOLAHTI 9230  $\pm$  130  
7280 BC

62°46'10"N, 29°35'20"E, 95.5 m a.s.l.

Peat, 1.10-1.12 m depth.

Comment(HV): Exposed lake bottom of Høytiäinen.

Hel-1020 HIILISUO SERIES Hel-933

Hel-1021 - 1024 VALKIAJÄRVI SERIES Hel-982

Hel-1025 - 1028 TEL LACHISH SERIES Hel-809

LAPURINSAARI SERIES, VIRONLAHTI

60°27'15"N, 29°35'00"E

Coll. 1977 by H: Alopaeus. Subm. 1977 by T. Edgren.

Comment(TE): The building technique of the Lapuri-wreck has very close parallels in Scandinavian ships (Skuldelev) from the Viking Age now confirmed by the datings, of which Hel-1030 is made of the oakum of the ship consisting of cow hair.

(Cf. The Maritime Museum Helsinki. Annual Report 1977, p. 4.)

Hel-1029 1190  $\pm$  90  
AD 760

Oak wood

Hel-1030 1010  $\pm$  80  
AD 940

Cow hair

Hel-1031 - 1032 VANA JAVESI SERIES Hel-952

Hel-1033 - 1036 HÖYTIÄINEN SERIES Hel-1016

Hel-1037 MASEHJAURI SERIES Hel-975

Hel-1038 - 1042 PALSA SERIES Hel-973

Hel-1043 HORSLÖK, PERNAJA

630  $\pm$  100  
AD 1320

Wood

Coll. 1977 by T. Laine. Subm. 1977 by O. Granö.

Hel-1044 - 1050 JÖNSAS SERIES Hel-868

Hel-1051 KURKELANSUO, NAKKILA

2810  $\pm$  100  
860 BC

6804.10 N, 555.30 E, 18.5 m a.s.l.

Peat, 2.0 m depth.

Coll. and subm. 1977 by M. Tikkanen.

Comment(MT): Isolation of the basin from the Baltic. Immigration of *Picea* in Nakkila (Tikkanen 1981).

NUOTTILAMPI SERIES, PYHÄJÄRVI

7087.50 N, 461.70 E, 146.2 m a.s.l.

Coll. 1977 with piston corer and subm. 1977 and 1978 by  
M. Tikkanen.

Hel-1052

9460  $\pm$  170  
7510 BC

Mud, 5.65 m depth.

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

Hel-1081

5500  $\pm$  140  
3550 BC

Mud, 3.25 m depth.

Comment(MT): Immigration of *Picea*.

Hel-1128

9480  $\pm$  120  
7530 BC

Mud, 5.45 m depth.

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

Hel-1129

9180  $\pm$  130  
7230 BC

Mud, 5.30 m depth.

Comment(MT): Immigration of *Alnus*.

KUNONNIEMI SERIES, KITEE

62°06'N, 30°13'E

Coll. 1976 by J. Vuorinen and K. Tolonen with spade and

a Russian corer. Subm. 1977 and 1978 by J. Vuorinen.  
 General comment(KT): A rapidly grown *S. fuscum* hummock was chosen for comparison of different methods useful in dating of surface peats. The same peat samples were used for estimation of heavy metal and SIRM fluxes onto the bog surface through time. All the  $^{14}\text{C}$  ages obtained are stratigraphically consistent and in good agreement with  $^{210}\text{Pb}$ -dating, with moss increment dating and with the onset of rye cultivation some AD 1200 as dated by annual laminations from a small lake nearby (Tolonen 1977, Pakarinen and Tolonen 1977, Oldfield et al. 1981, El-Daoushy et al. 1981, Vuorinen 1978, 1979).

Hel-1053	950 $\pm$ 110 AD 1000
Sphagnum peat, 0.80-0.83 m depth. Pollen analysis strongly indicates an intensive slash- and burn practice in the vicinity from 80 cm upwards.	
Hel-1094	1820 $\pm$ 120 AD 130
Sphagnum peat, 1.00-1.05 m depth.	
Hel-1140	800 $\pm$ 120 AD 1150
Sphagnum peat, 0.75-0.80 m depth.	
Hel-1141	1270 $\pm$ 100 AD 680
Sphagnum peat, 0.83-0.88 m depth.	

#### TORRONSUO SERIES, TAMMELA

60 $^{\circ}$ 43'N, 23 $^{\circ}$ 35'E, 105 m a.s.l.

Coll. 1977 and subm. 1978 by A. Siiriäinen.

General comment(AS): Gyttja and peat samples from a bog basin isolated from the Baltic Sea during the Ancyclus stage. Thus the result of Hel-1054 indicates a hiatus of ca. 2000 years between the clay and gyttja layers (Aartolahti 1965).

Hel-1054	5020 $\pm$ 110 3070 BC
Gyttja, 5.18-5.25 m depth.	
Hel-1055	4560 $\pm$ 110 2610 BC
Peat, 4.52-4.60 m depth.	

Hel-1056		3450 $\pm$ 130
Peat, 3.75-3.82 m depth.		1500 BC
Hel-1057		2900 $\pm$ 140
Peat, 2.80-2.87 m depth.		950 BC
Hel-1058		2590 $\pm$ 110
Peat, 2.20-2.27 m depth.		640 BC

Hel-1059 SKI SERIES Hel-803

#### YYTERI SERIES

61°33'N, 21°30'E, about 7 m a.s.l.

Coll. 1977 by T. Wallin. Subm. 1977 by T. Aartolahti.

General comment(TA): Dunes in Finland were built in two stages: inland dunes 10000-8000 years ago and dunes at recent coast 500-100 years ago (or during the little ice age). According to the location about 7 m a.s.l. the uppermost fossil dune at Yyteri was built about 950 yeras ago and is the oldest known dune at recent coast. The structure of dune indicates, that the dune has not moved.

Hel-1060	YYTERI 1	920 $\pm$ 100
Wood		AD 1030
Hel-1061	Yyteri 2	1040 $\pm$ 100
Wood		AD 910

Hel-1062	KALAJOKI	420 $\pm$ 110
64°11'N, 23°42'E, about 5 m a.s.l.		AD 1530
Wood		

Coll. 1976 and subm. 1977 by T. Aartolahti.

Comment(TA): A young coastal dune was built by wind, shifted near shore in forest and buried pines when dune moved away the stump appeared on deflation basin. According to the rate of land uplift the dune was built about 400 years ago. The dune moved about 100 m during 400 years according to a speed of 0.25 m/year. The dune is still moving.



Hel-1063 - 1068 SUBFOSSIL PINE SERIES Hel-807

Hel-1069 - 1072 MUKKAVAARAN LAMPI SERIES Hel-989

MAMMOTH FINDS IN FINLAND

General comment(J Donner): A molar and two bones of mammoth were dated as well as plant remains stuck to one of the bones. The ages of mammoth may suggest that large parts of Finland were ice-free in Middle Weichselian time (Donner et al. 1979).

Hel-1073 HERTTONIEMI I 4270  $\pm$  100  
2320 BC

Plant remains (stuck to the bone).

Hel-1074 HERTTONIEMI II 15500  $\pm$  200

Humerus of mammoth (between clay and sand under a bog).

Hel-1075 LOHTAJA 25200  $\pm$  500

Femur of mammoth (in a grey clay covered by 1 m of sand).

Hel-1076 ESPOO >43000

Molar of mammoth (in till).

Hel-1077 - 1079 SKI SERIES Hel-803

FINSTRÖM SERIES, AALAND

Coll. 1977 by M. Dreijer and 1978 by K. Weber.

Subm. 1977 by T. Edgren and 1978 by A. Siiriäinen.

Comment(TE): The samples of the Finström series originate from wooden constructions from several parts of the medieval church of Finström. The datings are obviously a few hundred yeras too old.

Hel-1080 1000  $\pm$  70  
AD 950

Wood

Hel-1167 430  $\pm$  90  
AD 1520

Wood

Hel-1168 700  $\pm$  90  
AD 1250

Wood

Hel-1169	650 $\pm$ 110
Wood	AD 1300
Hel-1170	700 $\pm$ 100
Wood	AD 1250

Hel-1081 NUOTTILAMPI SERIES Hel-1052

RÄTTUVARRI SERIES

69°21'N, 20°19'E, about 100 m a.s.l.

Coll. 1977 by H. Hyvärinen and M. Saarnisto with a Livingstone sampler. Subm. 1978 by H. Hyvärinen.

General comment(HH): The Rättuvarri series relates to studies in tree-line history and Flandrian pollen stratigraphy in N Fennoscandia. The basal date is consistent with the deglaciation history. Both radiocarbon dates and pollen indicate that the core is truncated, the topmost section covering about 3000 years being absent. The spread of pine is dated at 7300-7200 yrs BP (Eronen and Hyvärinen 1981).

Hel-1082	9460 $\pm$ 140
Gyttja, 2.55-2.65 m depth.	7510 BC
Hel-1083	7850 $\pm$ 130
Gyttja, 2.10-2.20 m depth.	5900 BC
Hel-1084	7020 $\pm$ 130
Gyttja, 1.60-1.70 m depth.	5070 BC
Hel-1085	5540 $\pm$ 110
Gyttja, 1.05-1.15 m depth.	3590 BC
Hel-1086	4250 $\pm$ 110
Gyttja, 0.50-0.60 m depth.	2300 BC

ALTA SERIES, NORWAY

69°52.5'N, 23°28'E, about 200 m a.s.l.

Coll. 1977 by H. Hyvärinen and M. Saarnisto with a Livingstone

sampler. Subm. 1978 by H. Hyvärinen.

General comment(HH): The Alta series relates to studies in Flandrian tree-line history and pollen stratigraphy in N Fennoscandia. The site is just inside the Tromsö-Lyngen (Younger Dryas) endmoraines, and the basal date is broadly consistent with the deglaciation history. On the basis of the pollen stratigraphy and the age of the topmost sample 20-30 cm below the top of the core, the core appears to be truncated.

Hel-1087	9930 $\pm$ 140
Gyttja, 1.35-1.45 m depth.	7980 BC

Hel-1088	8780 $\pm$ 130
Gyttja, 1.10-1.20 m depth.	6830 BC

Hel-1089	7030 $\pm$ 130
Gyttja, 0.80-0.90 m depth.	5080 BC

Hel-1090	5400 $\pm$ 110
Gyttja, 0.50-0.60 m depth.	3450 BC

Hel-1091	3880 $\pm$ 140
Gyttja, 0.20-0.30 m depth.	1930 BC

Hel-1092	THRUPP HOUSE FARM, ENGLAND	13260 $\pm$ 180
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Clay gyttja, 0.19-0.24 m depth.

Coll. 1977 by M. Aalto and P. Gibbard.

Subm. 1978 by M. Aalto.

Comment(MA): The sample is taken from an organic deposit resting in gravel and sand exposed at Thrupp House Farm. The gravels and sand were laid in a bed-load dominated river under cold climatic conditions. Another date from the same organic deposit gave an age of 13580 $\pm$ 120 (Q-2017) whilst a date of 47700<sup>+4000</sup><sub>-2600</sub> (Su-932) was obtained from obviously secondary Pinus bark (Aalto, and Gibbard in print.).

Hel-1093 KOIRALAMMINSUO SERIES Hel-1005

Hel-1094 KUNONNIEMI SERIES Hel-1053

Hel-1095 KYMENRANTA, KUUSANKOSKI 5090  $\pm$  130  
3140 BC

Wood, KM 20117.

Coll. by E. Naskali. Subm. 1977 by A. Siiriäinen.

Comment(AS): Sample from a sledge runner.

Hel-1096 NOORMARKKU 4900  $\pm$  150  
2950 BC

61°36'N, 22°03'E

Wood

Coll. by E. Naskali. Subm. 1977 by A. Siiriäinen.

Comment(AS): Sample from a sledge runner found in a bog from which both macrofossil and pollen evidence has been obtained of Late Stone Age, Bronze Age and Iron Age forest clearance, grazing and cultivation activities (Aalto et al. 1981).

Hel-1097 SKI SERIES Hel-803

Hel-1098 BURN OF BENHOLM, KINCARDINESHIRE, SCOTLAND >42000

Peat

Coll. 1934 by E. Mikkola. Subm. 1978 by J. Donner.

Comment(JD): Radiocarbon assay and pollen spectra suggest that the peat lenses in the basal parts of the exposed till are from Early or Middle Denvensian time (Donner 1979).

KÄRKKÄ SERIES, SALO

60°20'N, 23°10'E, about 30 m a.s.l.

Coll. 1977 by K. Tolonen with spade and Russian corer.

Subm. 1978 by M. Tolonen.

General comment(MT): The series belongs to an archaeological-botanical co-work. Pollen analysis is under investigation.

Hel-1099 SUO I:1 5170  $\pm$  130  
3220 BC

Coarse detritus gyttja and remnants of wood,  
1.86-1.92 m depth.

Hel-1100	SUO I:2	4930 $\pm$ 130
	LC-peat, 1.70-1.75 m depth.	2980 BC
Hel-1101	SUO I:3	4560 $\pm$ 120
	LC-peat H6(7), 1.35-1.40 m depth.	2610 BC
Hel-1102	SUO I:4	4690 $\pm$ 150
	LCS-peat, 1.00-1.05 m depth.	2740 BC

## HAHKIALA SERIES, HAUHO

61°09'N, 24°36'E, about 85 m a.s.l.

Coll. 1977 by K. Tolonen. In situ freezing.

Subm. 1978 by M. Tolonen.

General comment(MT): The dates are associated with the beginning of cultivation in the county of Tavastia. Due to the morphology of the basin the material consisted of a notable portion of allochthonous particles (twigs, conifercones, leaves etc.). Preliminary pollen analysis indicated that the three uppermost dates are not stratigraphically consistent and the sedimentation in the basin has not been peaceful. It is not possible to judge if the ages are correct.

Hel-1103	LIINA II 1	5080 $\pm$ 130
	Coarse detritus gyttja, 1.91-1.97 m depth.	3130 BC
Hel-1104	LIINA II 2	4310 $\pm$ 120
	Coarse detritus gyttja, 1.70-1.74 m depth.	2360 BC
Hel-1105	LIINA II 3	3480 $\pm$ 120
	Coarse detritus gyttja, 1.50-1.54 m depth.	1530 BC
Hel-1106	LIINA II 4	2630 $\pm$ 110
	Coarse detritus gyttja, 1.24-1.28 m depth.	680 BC

## KISSALAMPI SERIES, LAITIKKAJA, PÄLKÄNE

61°15'N, 24°21'E, about 90 m a.s.l.

Coll. 1977 by K. Tolonen. In situ freezing.

Subm. 1978 by M. Tolonen.

Ref. Tolonen, M. (1981).

- Hel-1107 KISSA I:1 3940  $\pm$  120  
1990 BC  
Coarse detritus laminated gyttja, 1.41-1.45 m depth.  
Comment(MT): Lower part of Subboreal Period with the first single Cerealia-type pollen grains in the profile.
- Hel-1108 KISSA I:2 3060  $\pm$  120  
1110 BC  
Coarse detritus gyttja, 1.25-1.30 m depth.  
Comment(MT): Small-scale cultivation with the final QM-decline below the SB/SA zone-boundary.
- Hel-1109 KISSA I:3 2400  $\pm$  110  
450 BC  
Coarse detritus gyttja, 1.00-1.05 m depth.  
Comment(MT): Continuous large scale agricultural activity in the Roman Iron Age. The date is ca. 600-800 years too old due to allochthonous eroded material from the watershed.

#### KETOHAKA SERIES, SALO

6705 N, 287 E / 60°23'N, 23°09'E, about 20 m a.s.l.

Coll. 1977 by K. Tolonen with spade and knife.

Subm. 1978 by M. Tolonen.

General comment(MT): The six dates from four different levels provide dating for local development of vegetation and environment. The site is situated within the Iron Age settlement site with burial cairn and fields. The study was made in co-operation with the archaeological Salo project. The dates and the profile stratigraphically consistent.

- Hel-1110 3240  $\pm$  110  
1290 BC  
Mineral soil profile with humus and charcoal (B-horizon), 0.38-0.40 m depth.  
Comment(MT): The sample shows the lowest record of agricultural activity during the older Bronze Age.
- Hel-1111 1190  $\pm$  100  
AD 760  
Peaty mineral soil profile with sand and charcoal (A-horizon), 0.215-0.230 m depth.

Comment(MT): The sample dates permanent, continuous cultivation in younger Iron Age.

Hel-1126 3220  $\pm$  120  
1270 BC

The humic fraction of Hel-1110.

Comment(MT): Sample was dated as a check for Hel-1110, and no significant age difference was present between the fraction.

Hel-1127 1190  $\pm$  100  
AD 760

The humic fraction of Hel-1111.

Comment(MT): A check for Hel-1111. No age difference present.

Hel-1362 1850  $\pm$  130  
AD 100

Humusrich mineral soil profile (mull),  
0.24-0.27 m depth (coll. 1979, subm. 1980).

Comment(MT): Beginning of Secale cultivation and permanent settlement after forest clearance.

Hel-1363 2320  $\pm$  120  
370 BC

Humusrich mineral soil profile (mull), 0.33-  
0.34 m depth (coll. 1979, subm. 1980).

Comment(MT): Pollen analysis revealed small-scale cultivation before the final deflorestation.

#### LIKOLAMPI SERIES, SALPAKANGAS, LAHTI

60°59'N, 25°31'E

Coll. 1977 by K. Tolonen. In situ freezing.

Subm. 1978 by M. Tolonen.

Hel-1112 1710  $\pm$  120  
AD 240

Coarse detritus gyttja, 1.20-1.25 m depth.

Comment(MT): Beginning of continuous farming and clearance in the early Iron Age.

Hel-1113 1740  $\pm$  130  
AD 210

Coarse detritus gyttja, 0.95-1.00 m depth.

Comment(MT): Large-scale agricultural activity on the

watershed caused eroding and the date is ca. 700-800 years too old.

Hel-1114 - 1123 VALKIAJÄRVI SERIES Hel-982

MALMTRÄSKET SERIES, PORVOO

60°21'07"N, 25°47'44"E, 22.7 m a.s.l.

Coll. and subm. 1978 by M. Eronen.

Hel-1124 5420 ± 140  
3470 BC

Gyttja, 6.10-6.05 m depth.

Comment(ME): Gyttja deposited after isolation of basin from the Litorina Sea.

Hel-1125 5720 ± 120  
3770 BC

Clay-gyttja, 6.15-6.10 m depth.

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

Hel-1126 - 1127 KETOHAKA SERIES Hel-1110

Hel-1128 - 1129 NUOTTILAMPI SERIES Hel-1052

BAKUNKÄRRSTRÄSKET SERIES, SIPOO

60°17'45"N, 25°12'00"E, 32.2 m a.s.l.

Coll. with a piston corer and subm. 1978 by H. Hyvärinen.

General comment(HH): These samples relate to studies in relative sea-level changes near Helsinki. Hel-1130 dates the beginning of a slightly brackish stage in the basin history (Mastogloia/early Litorina) and Hel-1131 the isolation of the basin from the Baltic (Hyvärinen 1979, see also Hyvärinen 1980).

Hel-1130 8010 ± 120  
6060 BC

Gyttja, 3.45-3.55 m depth.

Hel-1131 7250 ± 120  
5300 BC

Gyttja, 3.05-3.15 m depth.



## VARRASSUO SERIES, HOLLLOLA

6765.8 N, 580.8/24°E / 61°00'N, 25°28'E, 149 m a.s.l.

Coll. 1977 by K. Tolonen with steal cylinder, spade and knife.

Subm. 1978 by K. Tolonen.

General comment(KT): Four successive radiocarbon samples were dated from a Sphagnum fuscum hummock in order to obtain figures for net accumulation of peat. All the ages obtained are stratigraphically consistent, the uppermost one (Hel-1132) nicely fitting with the age estimation based on moss-increment dating from the same core.

Ref. Donner et al. (1978), Tolonen, K. (1979), Pohjola et al. (1980), (1981).

Hel-1132 370 ± 110  
AD 1580  
(N)S H5(-6) S fuscum (b.d. 74.2 gdm<sup>-3</sup>),  
0.30-0.40 m depth.

Hel-1133 860 ± 120  
AD 1090  
SH<sub>4</sub>(fuscum) (b.d. 51.1 gdm<sup>-3</sup>), 0.50-0.60 m depth.  
Comment(KT): Donner et al. (1978) dated 0.50-0.60 m level  
from a hollow site about 1 m north from the coring site  
obtaining an age 1400±100.

Hel-1134 880 ± 100  
AD 1070  
ErSH<sub>4</sub>(fuscum) (b.d. 48 gdm<sup>-3</sup>), 0.70-0.80 m depth.  
Comment(KT): Donner et al. (1978) dated 0.70-0.80 m level  
with an age 2480±110.

Hel-1135 1200 ± 100  
AD 750  
SH<sub>4</sub>(S fuscum) (b.d. 54.3 gdm<sup>-3</sup>), 0.90-1.00 m depth.  
Comment(KT): Donner et al. (1978) dated 0.90-1.00 m level  
back to 2560±110. It seems evidently that the slightly decom-  
posed hummock site within the uppermost meter, at least,  
has grown much faster than the hollow site of Donner et  
al. (1978).

Hel-1136 - 1139 HÖYTIÄINEN SERIES Hel-1016

Hel-1140 - 1141 KUNONNIEMI SERIES Hel-1053

Hel-1142 VANAJAVESI SERIES Hel-952

Hel-1143 TROLLBERG, HOUTSKARI 2990  $\pm$  140  
1040 BC

60°12'N, 21°24'E

Charcoal

Subm. 1978 by A. Erä-Esko.

Comment(A Siiriäinen): A burial cairn of the common Bronze Age type with no datable archaeological finds.

Hel-1144 - 1146 HÖYTIÄINEN SERIES Hel-1016

JOUPINKYLÄ, SEINÄJOKI

62°47'50"N, 29°49'10"E, 36 m a.s.l.

Coll. and subm. 1979 by M. Eronen.

Ref. Eronen et al. (1979).

Hel-1147 5690  $\pm$  150  
3740 BC

Shells of *Mytilus edulis*.

Comment(ME): According to the radiocarbon date and the shoreline displacement data the common mussels have been living in rather deep water.

Hel-1148 6010  $\pm$  170  
4060 BC

Organic matter from silt surrounding the shells of *Mytilus edulis*.

Comment(ME): The dates from shells and the organic matter of the silt show that the molluscs were living here when the silt deposits were formed.

SPÅKENES SERIES, NORWAY

69°45.5'N, 20°30'E

Coll. and subm. 1978 by H. Hyvärinen.

General comment (HH): Spåkenes samples date the occurrence of pine outside its present range in the Lyngenfjorden area. The nearest present occurrence of pine is at Skibotn about 50 km to

the east (Eronen and Hyvärinen 1981).

Hel-1149	3780 $\pm$ 100 1830 BC
Subfossil pine stump, about 0.5 m below the surface of the section.	
Hel-1150	5020 $\pm$ 110 3070 BC
Subfossil pine stump, about 1.5 m below the surface of the section.	

LAAVIOSUO SERIES, JAHKOLA, LAMMI

6769.0 N, 391.5 E / 61°01'N, 25°00'E, 160 m a.s.l.

Coll. 1977 by K. Tolonen with a steel cylinder and a Russian corer 10x100 cm. Subm. 1978 by K. Tolonen.

General comment(KT): For obtaining dry matter accumulation figures for a representative raised bog in S. Finland a volumetric core profile was taken and dated by thirteen successive radiocarbon datings. All the ages obtained are stratigraphically consistent and in agreement with the expectations based on pollenanalytical features, which are earlier dated from the study area (Tolonen, K. 1979).

Hel-1151	110 $\pm$ 90 AD 1840
SH <sub>5</sub> , b.d. 36.8 gdm <sup>-3</sup> , 0.50-0.60 m depth.	
Hel-1152	600 $\pm$ 90 AD 1350
SH <sub>4-5</sub> (Sphagnum fuscum), b.d. 70.3 gdm <sup>-3</sup> , 0.90-1.00 m depth.	
Hel-1153	1870 $\pm$ 110 AD 80
SH <sub>4</sub> (Sphagnum fuscum), b.d. 60.6 gdm <sup>-3</sup> , 1.80-1.90 m depth.	
Comment(KT): Sample taken just above distinct Picea fall, a common feature in Lammi area. Cerealia and Cannabis pollen grains 10 cm above the dated level.	
Hel-1154	1280 $\pm$ 90 AD 670
SH <sub>4</sub> (Sphagnum fuscum), b.d. 70.3 gdm <sup>-3</sup> , 1.40-1.50 m depth.	

Comment(KT): Dated sample just below the first occurrence of rye (*Secale*) pollen grains.

Hel-1155 690  $\pm$  130

ErSH<sub>5</sub>(*Sphagnum acutifolia*), b.d. 52.6 gdm<sup>-3</sup>, AD 1260

1.00-1.10 m depth.

Comment(KT): Pollen diagram indicates crop cultivation in the area.

Hel-1156 2400  $\pm$  140

SH<sub>4</sub>(*Sphagnum fuscum*), b.d. 37.7 gdm<sup>-3</sup>,

2.80-2.90 m depth.

Comment(KT): 20 cm below clear QM<sup>-</sup> and *Alnus* decline.  
*Picea* very high.

Hel-1157 2320  $\pm$  100

SH<sub>4</sub>(*Sphagnum fuscum*), b.d. 42.9 gdm<sup>-3</sup>,

2.40-2.50 m depth.

Comment(KT): 10 cm above clear QM<sup>-</sup> and *Alnus* decline.  
Wettest stage in the history of the bog. *Picea* very high.

Hel-1158 3100  $\pm$  150

SH<sub>5</sub>(*Sphagnum fuscum*), b.d. 64.0 gdm<sup>-3</sup>,

3.30-3.40 m depth.

Comment(KT): *Picea* about 20% of AP. QM still quite high.

Hel-1159 4420  $\pm$  130

ErSH<sub>6</sub>(*Sphagnum fuscum*), b.d. 92.6 gdm<sup>-3</sup>,

4.00-4.10 m depth.

Comment(KT): *Picea*<sup>0,+</sup>, decline in *Ulmus* and *Tilia*.

Hel-1160 8780  $\pm$  120

ErSH<sub>7</sub>, b.d. 90.9 gdm<sup>-3</sup>, 5.35-5.45 m depth.

Comment(KT): Below rational *Alnus* limit. 10 cm below the sample level the share of *Betula* rises to 76-91% of AP.

Hel-1161 7690  $\pm$  160

ErSH<sub>8</sub>, b.d. 112.6 gdm<sup>-3</sup>, 5.05-5.15 m depth.

Comment(KT): *Alnus* about 10% of AP, starting of *Ulmus*,  
*Corylus* 2-6%.

Hel-1162 6580  $\pm$  150  
4630 BC  
ErSH<sub>8</sub>, b.d. 98.3 gdm<sup>-3</sup>, 4.85-4.95 m depth.  
Comment(KT): Tilia<sup>0</sup>. Maximum in Alnus and QM.

Hel-1163 5620  $\pm$  100  
3670 BC  
ErSH<sub>7</sub>, b.d. 70.8 gdm<sup>-3</sup>, 4.45-4.55 m depth.  
Comment(KT): Tilia<sup>+</sup> is about 10 cm below this level.

## PYHEENSILTA SERIES, MYNÄMÄKI

Coll. 1978 by L. Väkeväinen. Subm. 1978 by T. Edgren.

Hel-1164 2390  $\pm$  110  
440 BC  
Charcoal from stone setting I, 0.20-0.30 m depth.

Hel-1165 2080  $\pm$  110  
130 BC  
Charcoal from stone setting I, 0.20-0.30 m depth.

Hel-1166 2130  $\pm$  100  
180 BC  
Charcoal from stone setting II, 0.20-0.30 m depth.

Hel-1167 - 1170 FINSTRÖM SERIES Hel-1080

Hel-1171 - 1175 LAUHANVUORI SERIES Hel-859

## YLIMYSNEVA SERIES, PARKANO

62°08'N, 22°52'E, 172 m surface alt.

Samples from various levels of a mire, taken in order to date the vegetational succession and to calculate the rate of peat growth.

Coll. 1975 using a Russian peat sampler by A. Huttunen.

Subm. 1978 by A. Huttunen and Y. Vasari.

Hel-1176 220  $\pm$  100  
AD 1730  
ErS-peat, 0.475-0.425 m depth.  
Comment(AH): The meaning of this sample was mainly to date the beginning of agriculture on the basis of the rise of Cerealia pollen curve. The age obtained was too young and a control sample (Hel-1180) was taken from a charcoal layer

near the margin of the mire. The pollen stratigraphy there corresponds with that of this site. The much too young age has possibly been caused by deep penetrating roots.

Hel-1177 3320  $\pm$  150  
1370 BC

CS-peat, 1.10-1.15 m depth.

Comment(AH): Local elm decline towards the end of the Hypsithermal period, and the spread of spruce (Pc<sup>+</sup>).

Hel-1178 5030  $\pm$  160  
3080 BC

CS-peat 1.525-1.575 m depth.

Comment(AH): Immigration of spruce (Pc<sup>0</sup>). Almost contemporaneous with the common concept concerning the age of the boundary AT/SB with, however, no clear pollenstratigraphical changes other than Pc<sup>0</sup>.

Hel-1179 8100  $\pm$  160  
6150 BC

Telmatic SC-peat, 2.35-2.40 m depth.

Comment(AH): Pine maximum slightly below the rise of Alnus curve (A<sup>+</sup>). Corresponds with the stratigraphical boundary silty gyttja/telmatic peat.

Hel-1180 800  $\pm$  130  
AD 1150

Coal layer, covered by peat, 0.29 m depth.

Comment(AH): Sample taken in order to correct the obviously wrong age of the beginning of the Cerealia curve as obtained through the sample Hel-1176. This age is in good agreement with prevalent concepts concerning the age of the agriculture here, and with the peat growth curve.

Hel-1181 AUTIORANTA, SIILINJÄRVI 250  $\pm$  120  
AD 1700

6988.62 N, 523.68 E / 63°00'N, 27°26'E

Charcoal

Coll. 1977 by L. Pohjakallio. Subm. 1977 by A. Siiriäinen

Ref. Pohjakallio (1978).

## KATAJAMÄKI - KETOHAKA SERIES, SALO

60°24'N, 23°08'E, 35-45 m a.s.l.

Charcoal samples from an Iron Age dwelling site area. The samples are mainly from hearths and postholes and date the period of habitation. Coll. and subm. 1978 and 1979 by C. Carpelan.

Ref. Carpelan and Jungner (1982), Uino (1982).

Hel-1182	KATAJAMÄKI	1830 ± 110
570/694/5		AD 120
Charcoal from hearth 95.		
Hel-1183	KATAJAMÄKI	1940 ± 110
558/700/6		AD 10
Charcoal from posthole 48.		
Hel-1184	KETOHAKA	2870 ± 120
570/740/4		920 BC
Charcoal from culture layer 201.		
Hel-1185	KATAJAMÄKI	1770 ± 110
546/682/3		AD 180
Charcoal from hearth 9.		
Hel-1187	KATAJAMÄKI	1800 ± 90
530/692/3		AD 150
Charcoal from hearth 2.		
Hel-1188	KATAJAMÄKI	1390 ± 110
550/682/3		AD 560
Charcoal from hearth 13.		
Comment(CC); See the comment for Hel-1265.		
Hel-1189	KATAJAMÄKI	1780 ± 100
570/694/4		AD 170
Charcoal from hearth 95.		
Hel-1190	KETOHAKA	2880 ± 130
570/740/5		930 BC
Charcoal from culture layer 201.		

## KATAJAMÄKI - KETOHAKA SERIES, SALO

60°24'N, 23°08'E, 35-45 m a.s.l.

Charcoal samples from an Iron Age dwelling site area. The samples are mainly from hearths and postholes and date the period of habitation. Coll. and subm. 1978 and 1979 by C. Carpelan.

Ref. Carpelan and Jungner (1982), Uino (1982).

Hel-1182	KATAJAMÄKI	1830 ± 110
570/694/5		AD 120
Charcoal from hearth 95.		
Hel-1183	KATAJAMÄKI	1940 ± 110
558/700/6		AD 10
Charcoal from posthole 48.		
Hel-1184	KETOHAKA	2870 ± 120
570/740/4		920 BC
Charcoal from culture layer 201.		
Hel-1185	KATAJAMÄKI	1770 ± 110
546/682/3		AD 180
Charcoal from hearth 9.		
Hel-1187	KATAJAMÄKI	1800 ± 90
530/692/3		AD 150
Charcoal from hearth 2.		
Hel-1188	KATAJAMÄKI	1390 ± 110
550/682/3		AD 560
Charcoal from hearth 13.		
Comment(CC): See the comment for Hel-1265.		
Hel-1189	KATAJAMÄKI	1780 ± 100
570/694/4		AD 170
Charcoal from hearth 95.		
Hel-1190	KETOHAKA	2880 ± 130
570/740/5		930 BC
Charcoal from culture layer 201.		



- Hel-1255 KATAJAMÄKI 2270  $\pm$  110  
320 BC  
544/696/3  
Charcoal from covered ditch 8 with pottery finds 7.
- Hel-1256 KATAJAMÄKI 1530  $\pm$  110  
AD 420  
550/684/3  
Charcoal from hearth 13.  
Comment(CC): See the comment for Hel-1265.
- Hel-1257 KATAJAMÄKI 1970  $\pm$  110  
20 BC  
550/684/3  
Charcoal from hearth 12.  
Comment(CC): See the comment for Hel-1265.
- Hel-1258 KATAJAMÄKI 1730  $\pm$  110  
AD 220  
556/692/4  
Charcoal from posthole 36.
- Hel-1259 KETOHAHA 2110  $\pm$  120  
160 BC  
568/728/5  
Charcoal from hearth 202.
- Hel-1260 KATAJAMÄKI 1890  $\pm$  110  
AD 60  
574/694/3  
Charcoal from hearth 105.
- Hel-1261 KATAJAMÄKI 1970  $\pm$  100  
20 BC  
580/698/3  
Charcoal from hearth 110.
- Hel-1262 KATAJAMÄKI 1910  $\pm$  110  
AD 40  
552-554/688-690/3  
Charcoal from hearth 19.
- Hel-1263 KATAJAMÄKI 2000  $\pm$  110  
50 BC  
552-554/690-692/3  
Charcoal from hearth 20.

Hel-1264 KATAJAMÄKI 1900  $\pm$  110  
AD 50  
552-554/686/3  
Charcoal from hearth 18.

Hel-1265 KATAJAMÄKI 1720  $\pm$  110  
AD 230  
550/684/5  
Charcoal from hearth 12.  
Comment(CC): Hearth 12 is partly covered by hearth 13.

Hel-1186 KETOMÄKI, SALO 1800  $\pm$  110  
AD 150  
60°24'N, 23°08'E, 55 m a.s.l.  
Coll. and subm. 1978 by C. Carpelan.  
Charcoal from hearth, 0.30 m depth.  
Comment(CC): Dates Iron Age dwelling site.

Hel-1187 - 1190 KATAJAMÄKI - KETOHAKA SERIES Hel-1182

Hel-1191 LEBA DUNE AREA, THE NORTHERN COAST OF POLAND

Wood modern

Coll. 1978 by L. Koutaniemi and A. Rachocki.

Subm. 1978 by M. Seppälä.

Comment(MS): The sample was collected from the wind facing side of a very high and active sand dune from a dead tree on the deflation area. The idea was to date the rate of movement of the dune. Either the annual rate has been very great or the trees are killed by some other reason as passing sand dune.

Hel-1192 - 1194 SUBFOSSIL PINE SERIES Hel-807

Hel-1195 MUOJÄRVI, KUUSAMO 5690  $\pm$  110  
3740 BC

Wood, KM 20248.

Coll. 1978 by L. Tomanterä. Subm. 1978 by A. Siiriäinen.

Comment(AS): Fragment of a sledge runner found from lake bottom. On typological evidence the specimen belongs to the Comb Ceramic period which is confirmed by the dating result.

Hel-1196 KÄRENLAMPI 3110  $\pm$  100  
1160 BC

Carex-peat, 1.10 m depth.

Coll. with piston corer and subm. 1978 by A. Okko.

Comment(P Alhonen): The date is from the lower part of Carex-peat above fine detritusgyttja in the lithostratigraphy giving the age for the beginning of paludification of this small pond.

Hel-1197 - 1200 VANAJAVESI SERIES Hel-952

Hel-1201 - 1202 JÖNSAS SERIES Hel-868

#### SNAIL SHELL SERIES, HUNGARY

Coll. 1978 by M. Pécsi.

Shells collected to date the loess-like deposits in the Great Hungarian Plain.

Ref. Márton et al. (1979).

Hel-1203 HÓDMEZÖVÁSÁRHELY 24130  $\pm$  460  
 $\delta^{13}\text{C} = -8.0\%$   
Snail shell fragments from 3.5 m depth,  
a clayey-silty layer.

Hel-1204 TÖRÖKSZENTMIKLÓS 20100  $\pm$  330  
 $\delta^{13}\text{C} = -9.5\%$   
Snail shell fragments from a silty layer  
located at a depth of 2.7 m.

Hel-1205 MOHÁCS 21520  $\pm$  350  
 $\delta^{13}\text{C} = -8.5\%$   
Snail shell fragments from a marshy layer  
located at 5 m depth.

Hel-1206 TISZAFÖLDVÁR 17100  $\pm$  240  
 $\delta^{13}\text{C} = -6.3\%$   
Snail shells from a loess layer located  
at 1.92-2.62 m depth.

#### BABI DO SERIES, NORTH-POLAND

x=6018.60, y=6517.50

Coll. 1978 by L. Koutaniemi and A. Rachocki.

Subm. 1978 by L. Koutaniemi.

Comment(LK): In constructing the evolution of the landscape in the Babi Do basin two samples were dated. For ref. see Koutaniemi and Rachocki (1981).

Hel-1207	RAD II	8410 $\pm$ 150
	Wood, 1.6 m depth.	6460 BC
Hel-1208	RAD II	8550 $\pm$ 120
	Organic remains, 1.6 m depth.	6600 BC

#### TARUSLAMPI SERIES, SYSMÄ

60°41'N, 25°38'E, 81 m a.s.l.

Coll. 1978 by M. Eronen with a Livingstone corer.

Subm. 1979 by I. Vuorela.

Ref. Vuorela (1979, 1981).

Hel-1209		1360 $\pm$ 120
	Gyttja-claygyttja, 0.55-0.60 m depth.	AD 590
	Comment(IV): The start of permanent agriculture according to Cerealia and weed pollen curves.	

Hel-1210		2380 $\pm$ 140
	Gyttja-claygyttja, 1.29-1.47 m depth.	430 BC
	Comment(IV): The clay-gyttja/gyttja boundary with relative increase in Betula and loss-on-ignition curves.	

#### KAAKOTINLAMPI SERIES, SYSMÄ

61°18'N, 25°52'E, 104.6 m a.s.l.

Coll. 1978 by M. Eronen with a Livingstone corer.

Subm. 1979 by I. Vuorela.

Ref. Vuorela (1979, 1981).

Hel-1211		1270 $\pm$ 130
	Gyttja, 0.05-0.15 m depth.	AD 680
	Comment(IV): The start of permanent agriculture according to the Cerealia pollen curve.	

Hel-1212		5470 $\pm$ 160
	Gyttja, 0.50-0.60 m depth.	3520 BC

- Comment(IV): The rise in Picea curve ( $Pc^+$ ).
- Hel-1213 6290  $\pm$  160  
4340 BC  
Gyttja, 0.70-0.80 m depth.  
Comment(IV): The rise in Tilia curve ( $T^+$ ).
- Hel-1214 6940  $\pm$  160  
4990 BC  
Gyttja, 1.00-1.05 m depth.  
Comment(IV): An occasional rise in Tilia, Picea and loss-on-ignition.
- Hel-1215 8790  $\pm$  120  
6840 BC  
Gyttja, 1.35-1.45 m depth.  
Comment(IV): The rise in Alnus curve ( $A^0$ ).
- Hel-1216 8780  $\pm$  120  
6830 BC  
Gyttja, 1.50-1.60 m depth.  
Comment(IV): The early local Pinus P.A.Z.
- Hel-1217 PÄIVÄRINNE, LUHANKA 1610  $\pm$  90  
AD 340  
61°42'N, 25°32'E, 94 m a.s.l.  
Charcoal from a hearth, 17130, about 0.35 m depth.  
Coll. 1965 by T. Miettinen. Subm. 1979 by H. Matiskainen.  
Comment(HM): Comb Ceramic style I:1 found at the site (Matiskainen 1979).
- Hel-1218 LÄHDEMÄKI, KORPILAHTI 5350  $\pm$  100  
3400 BC  
61°53'N, 25°44'E, 90 m a.s.l.  
Charcoal from a hearth, 16823, about 0.40 m depth.  
Coll. 1964 by T. Miettinen. Subm. 1979 by H. Matiskainen.  
Comment(HM): Comb Ceramic style II:1. The date and archaeological finds are in agreement (Matiskainen 1979).
- ISOSUO SERIES, KLAUKKALA
- Coll. 1977 with a piston core and subm. 1979 by V. Saaritsa.  
General comment(P Alhonen): The datings give data on the discovered tephra-horizons in the bog stratigraphy probably corresponding to the certain eruptions of Hekla in Iceland.

Hel-1219	1900 $\pm$ 90 AD 50
Peat, 1.10-1.12 m depth.	
Hel-1220	2800 $\pm$ 100 850 BC
Peat, 2.50-2.52 m depth.	
Hel-1221	3100 $\pm$ 120 1150 BC
Peat, 2.86-2.92 m depth.	

## MUSTALAMPI SERIES, NUUKSIO

60°17'25"N, 24°39'18"E, 61.4 m a.s.l.

Ref. Eronen and Haila (1982).

Hel-1222	8300 $\pm$ 120 6350 BC
Gyttja, 5.70-5.80 m depth.	
Comment(ME): Lake sediment deposited after the Ancyclus transgression. The beginning of Alnus pollen curve.	
Hel-1223	9410 $\pm$ 170 7460 BC
Gyttja, 5.85-6.00 m depth.	
Comment(ME): The end of the Ancyclus transgression. The date is obviously hundreds of years too old.	
Hel-1224	9490 $\pm$ 180 7540 BC
Clay-gyttja, 6.00-6.15 m depth.	
Comment(ME): A layer deposited during the Ancyclus transgression.	
Hel-1225	9780 $\pm$ 200 7830 BC
Clay-gyttja, 6.20-6.35 m depth.	
Comment(ME): The beginning of the Ancyclus transgression. The boundary between Betula/Pinus regional pollen assemblage zones. The date is obviously too old.	
Hel-1226	10130 $\pm$ 190 8180 BC
Clay-gyttja, 6.45-6.60 m depth.	
Comment(ME): The isolation of the basin below the Ancyclus transgression. The date is probably too old.	

Hel-1227 FÄNGKÄRRSBERGET, KARJAA 180 ± 90  
 AD 1770  
 60°08'N, 23°46'E  
 Charcoal, KM 20089.  
 Coll. 1977 by A. Sarvas. Subm. 1978 by A. Siiriäinen.  
 Comment(AS): A burial cairn of the Bronze Age type. The dating  
 result might reflect later activity in the vicinity of the site.  
 The area has been used as a meeting place in recent times.

Hel-1228 KANTTORINMÄKI, NUMMI, TURKU 1920 ± 100  
 AD 30  
 6706.20 N, 571.30 E / 60°27'N, 22°18'E  
 Charcoal, 0.60 m depth.  
 Coll. 1977 by S. Sarkki. Subm. 1978 by A. Siiriäinen.  
 Comment(SS): Habitation site with Late Neolithic artefacts,  
 thus the dating result refers to a later occupation at the  
 site.

#### KÄRSÄMÄKI SERIES, TURKU

60°28'N, 22°17'E  
 Coll. 1977 by S. Sarkki. Subm. 1978 by A. Siiriäinen.  
 General comment(SS): Habitation site with typical Comb Ware.  
 Thus the result of Hel-1229 belongs to this context while that  
 of Hel-1230 refers to a later occupation at the site.

Hel-1229 4790 ± 90  
 2840 BC  
 6709.15N, 570.84 E  
 Charcoal from a hearth, 0.60 m depth.

Hel-1230 2170 ± 90  
 220 BC  
 6709.12N, 570.82 E  
 Charcoal, 0.50 m depth.

#### SAMPLES FROM AHKIO-SLEDS

Coll. by E. Naskali. Subm. 1978 by A. Siiriäinen.

Hel-1231 HAUKILAHTI, JOUTSENO 360 ± 90  
 AD 1590  
 Wood, EKM 4699.

- Hel-1232 KITKAJÄRVI, KUUSAMO 360  $\pm$  90  
AD 1590  
Wood
- Hel-1236 KIHNIÖ 830  $\pm$  90  
AD 1120  
Wood, MVKTE 10486.
- Hel-1233 SKI SERIES Hel-803
- Hel-1234 RAASEPORI, TAMMISAARI 420  $\pm$  90  
AD 1530  
6658.04 N, 313.31 E, about 1.5 m a.s.l.  
Wood from a post in the entrenchment at the castle.  
Coll. 1978 by M. Raatikainen. Subm. 1978 by A. Siiriäinen.
- Hel-1235 SKI SERIES Hel-803
- Hel-1236 SAMPLES FROM AHKIO-SLEDS Hel-1231
- Hel-1237 SKI SERIES Hel-803
- PERÄLAMPI SERIES, KUUSAMO  
7322 N, 599 E / 65°59'N, 29°15'E, 254 m a.s.l.  
Coll. 1975 by M. Hicks with a Livingstone corer.  
Subm. 1979 by S. Hicks.
- Hel-1238 1970  $\pm$  140  
20 BC  
Sandy gyttja, 5.98-6.09 m depth.  
Comment(SH): This sample was taken to date a phase of minor agricultural activity indicated in the pollen stratigraphy by slight increase in Gramineae values and the presence of a few pollen grains of Cerealia type. Because of the low organic content of the sediment the sample covers a wide depth range and covers virtually the whole of the phase rather than pinpointing its commencement (see also comments on Hel-1269).
- Hel-1269 1640  $\pm$  110  
AD 310  
Sandy gyttja, 5.45-5.60 m depth.  
Comment(SH): Like sample Hel-1238 this was taken to date



a phase of agricultural activity of which there are similar slight indications in the pollen stratigraphy. For this sample, too, the depth range of sediment is great and the date refers to the phase in question. On the basis of the pollen stratigraphy and with reference to date Hel-1238, this date is much older than anticipated. If the two dates are taken together then the rate of accumulation for the lower part of the sediment is nearly six times greater than in the upper part. However, pollen concentration values are at least twice as high in the lower part of the diagram than in the upper which is the direct opposite of what would be expected if the rate of accumulation suddenly slowed down. Neither is there any lithological change that would suggest a changed accumulation rate. From the pollen stratigraphical point of view, if this slight agricultural phase is as old as 1640 BP then one would expect to find indications of a more major phase above this corresponding to the historically documented commencement of farming around 300-350 BP, but this is not so. In view of this it seems quite possible that both Hel-1238 and Hel-1269 may be giving too old values.

METSOLANSUO SERIES, KORSO

60°20'57"N, 25°06'28"E, 45.2 m a.s.l.

Coll. 1978 and subm. 1979 by M. Eronen.

Ref. Eronen and Haila (1982).

Hel-1239

8490 ± 120  
6540 BC

Peat, 1.44-1.49 m depth.

Comment(ME): Peat formed after isolation of basin from the Baltic. Rise of the Alnus pollen curve.

Hel-1240

8570 ± 190  
6620 BC

Gyttja, 1.49-1.54 m depth.

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

## PYHÄJÄRVI SERIES

## A. MANNILANLAHTI, EURA

61°01'10"N, 22°11'02"E, level of the lake about 45 m a.s.l.  
Coll. and subm. 1979 and 1980 by O. Heikkinen, M. Tikkanen and  
M. Eronen.

Ref. Eronen et al. (1982).

- |   |                           |
|---|---------------------------|
| Hel-1241  | 7970 $\pm$ 170<br>6020 BC |
| Bryales peat layers in silt, 8.10-8.30 m depth.   |                           |
| Comment(ME): Sediment deposited before the beginning of<br>the Litorina Sea stage, and the mosses give the age of<br>this layer.                                    |                           |
| Hel-1390  | 7870 $\pm$ 140<br>5920 BC |
| Silt with sand and some organic matter,<br>8.00-7.85 m depth.   |                           |
| Comment(ME): Sediment deposited just before the beginning<br>of the Litorina Sea stage.   |                           |
| Hel-1391  | 7420 $\pm$ 120<br>5470 BC |
| Clay-gyttja, 7.85-7.70 m depth.   |                           |
| Comment(ME): Sediment deposited in brackish water in the<br>beginning of the Litorina Sea stage.  |                           |
| Hel-1392  | 5680 $\pm$ 120<br>3730 BC |
| Gyttja-clay, 4.90-4.80 m depth.   |                           |
| Comment(ME): Sediment deposited in brackish water just<br>before the isolation of the basin from the Litorina Sea.  |                           |
| Hel-1393  | 5580 $\pm$ 120<br>3630 BC |
| Gyttja-clay, 4.80-4.70 m depth.   |                           |
| Comment(ME): Sediment deposited in fresh water just<br>after isolation of the basin from the Litorina Sea.  |                           |
| Hel-1394  | 4320 $\pm$ 130<br>2370 BC |
| Clay-gyttja, 2.60-2.50 m depth.   |                           |
| Comment(ME): The beginning of the rise of the Picea<br>pollen curve. Compared to other dates of Picea curves<br>in this area the date seems to be somewhat too old. |                           |

Hel-1395

4020  $\pm$  130  
2070 BC

Clay-gyttja, 2.50-2.40 m depth.

Comment(ME): Rise of the Picea pollen curve. Compared to other dates of Picea curves in this area the date seems to be somewhat too old.

## B. YLÄNE

60°54'10"N, 22°23'33"E, 45 m a.s.l.

Coll. 1978 and subm. 1979 by O. Heikkinen, M. Tikkanen and M. Eronen.

Ref. Eronen et al. (1982).

Hel-1242

3070  $\pm$  100  
1120 BC

Peat, 1.20-1.23 m depth.

Comment(ME): Upper part of a peat layer underlying a sand deposit. The peat was covered by sand during the transgression caused by uneven landuplift in the southern part of Lake Pyhäjärvi.

Hel-1243

3950  $\pm$  110  
2000 BC

Peat, 1.47-1.50 m depth.

Comment(ME): Lower part of a peat layer underlying a sand deposit. The peat was covered by sand during the transgression caused by uneven landuplift in the southern part of Lake Pyhäjärvi.

Hel-1244

660  $\pm$  110  
AD 1290

Peat, about 0.80 m below water surface.

Comment(ME): A thin peat layer covered by sand, below the water level in the southern part of Lake Pyhäjärvi. This peat layer is not directly connected with the water level fluctuations of the lake.

Hel-1360 (SE-end)

780  $\pm$  110  
AD 1170

60°54'10"N, 22°23'30"E

Peat, 0.40-0.45 m depth.

Comment(ME): Peat from a former shore bank of Lake Pyhäjärvi at the edge of a raised bog.

Hel-1361 (SE-end) 2600  $\pm$  100  
650 BC  
Peat, 1.45-1.50 m depth.  
Comment(ME): Basal peat of a raised bog, under a former shoreline of Lake Pyhäjärvi.

## LIIPPASUO SERIES, KUUSAMO

7337.02 N, 471.73 E

Coll. 1977 by L. Koutaniemi and M. Seppälä.

Subm. 1979 by L. Koutaniemi.

Comment(LK): Development of strings and ponds in a aapa-mire was the main idea in dating several peat horizons in the studied bog.

Hel-1245 8040  $\pm$  180  
6090 BC

Peat, 3.00-3.05 m depth.

Hel-1246 7310  $\pm$  180  
5360 BC

Peat, 2.76-2.80 m depth.

Hel-1247 6390  $\pm$  160  
4440 BC

Peat, 2.44-2.48 m depth.

Hel-1248 7640  $\pm$  160  
5690 BC

Peat, 3.30-3.34 m depth.

Hel-1249 4830  $\pm$  90  
2880 BC

Peat, 1.86-1.94 m depth.

Hel-1250 3940  $\pm$  140  
1990 BC

Peat, 1.46-1.50 m depth.

Hel-1251 3120  $\pm$  130  
1170 BC

Peat, 0.94-1.02 m depth.

Hel-1252 - 1254 OULANKA SERIES Hel-854

Hel-1255 - 1265 KATAJAMÄKI - KETOHAKA SERIES Hel-1182

## ODILAMPI SERIES, ESPOO

60°18'N, 24°46'E, 34.9 m a.s.l.

Subm. 1979 by H. Hyvärinen.

Ref. Hyvärinen (1980).

Hel-1266 8010  $\pm$  120  
6060 BC

Gyttja, 5.85-6.00 m depth.

Comment(HH): Odilampi series relates to studies in relative sea-level changes near Helsinki. The sample dates the isolation of the lake from the Ancylus lake.

Hel-1267 7370  $\pm$  110  
5420 BC

Gyttja, 4.95-5.10 m depth.

Comment(HH): Control sample for Hel-1266. Small-lake sediment 90 cm above the isolation contact. Dates the rational limit of Tilia ( $T^0$ ).

Hel-1268 6390  $\pm$  110  
4440 BC

Gyttja, 4.00-4.15 m depth.

Comment(HH): Control sample for Hel-1266 and Hel-1267. Small-lake sediment 1.85 m above the isolation contact.

Hel-1269 PERÄLAMPI SERIES Hel-1238

LAGO GUZMAN, JALISCO, MEXICO

19°40'N, 103°30'W

Coll. 1979 by B. Fine and V. Markgraf.

Subm. 1979 by V. Markgraf.

Hel-1270 530  $\pm$  130  
AD 1420

Dark gray clay, 0.34-0.35 m depth.

Hel-1271 950  $\pm$  100  
AD 1000

Dark brown peat, 0.41-0.42 m depth.

Hel-1272 KAPPELINPELTO, JUVA 480  $\pm$  90  
AD 1470

61°48'30"N, 27°32'E

Charred wood, KM 19227:16, about 0.55 m depth.

Coll. 1973 by M. Huurre. Subm. 1979 by A. Siiriäinen.

Comment(MH): According to tradition a church and a burial ground may have situated on this place. During excavations more than ten graves have been found but no archaeologically

dateable objects. The loss of object points towards Christian time. The sample is taken from the board of a coffin.

Hel-1273 20592/3 7030  $\pm$  240  
5080 BC

Charcoal, about 0.40 m depth.

Coll. 1979 by M. Torvinen. Subm. 1979 by A. Siiriäinen.

Hel-1274 TÖRMÄVAARA, TERVOLA 1150  $\pm$  90  
AD 800

66°07'N, 24°43'E

Charcoal, KM 20611, about 0.40 m depth.

Coll. 1979 by L. Ruonavaara. Subm. 1979 by A. Siiriäinen.

Comment(AS): There are no archaeological evidence for habitation at the site during the period indicated by the results. All the artefacts belong to Middle Neolithic period.

Hel-1275 GaJj II modern

03°85'N, 36°23.5'E, Area 127

Freshwater shell from Etheria (oyster reef) exposed shellbed.

Coll. and subm. 1979 by J. Barthelme.

Comment(JB): Sample derived from a large continuous off shore freshwater oyster bar. An archaeological site (GaJj II) lies to the south east some 150 meters distant. A previous dating of the oyster reef also yielded a modern age (GX-5477).

Hel-1276 8920  $\pm$  130  
6970 BC

03°86'N, 36°14.5'E, Area 102

Snails, embayment of diatomaceous silts.

Coll. and subm. 1979 by J. Barthelme.

Comment(JB): Unit with molluscs is lateral to beach sand with archaeological site (GaJj).

Hel-1277 9110  $\pm$  130  
7160 BC

Pieces of shells from sample Hel-1276.

Hel-1278 - 1280 OULANKA SERIES Hel-1276

## LAIHALAMPI SERIES, NUUKSIO

60°15'14"N, 24°36'26"E, water level 56.8 m a.s.l.

Coll. 1978 and subm. 1979 by M. Eronen.

Ref. Eronen and Haila (1982).

Hel-1281 9020 ± 120  
7070 BC

Clay-gyttja, 5.60-5.75 m depth.

Comment(ME): The rise of the Alnus pollen curve. The date is hundreds of years too old.

Hel-1282 9470 ± 120  
7520 BC

Clay-gyttja, 5.80-5.95 m depth.

Comment(ME): The beginning of the Alnus pollen curve. The date is obviously hundreds of years too old.

Hel-1283 9180 ± 180  
7230 BC

Clay-gyttja, 6.00-6.12 m depth.

Comment(ME): Isolation of the basin after the Ancyclus transgression.

Hel-1284 9730 ± 210  
7780 BC

Clay-gyttja, 6.20-6.35 m depth.

Comment(ME): Layer deposited during the Ancyclus transgression. The boundary between Betula/Pinus regional pollen assemblage zones. The date is obviously too old.

Hel-1285 10100 ± 210  
8150 BC

Clay-gyttja, 6.35-6.50 m depth.

Comment(ME): Layer deposited before the Ancyclus transgression. The date is obviously too old.

Hel-1286 LOHIRANTA, POSIO 5490 ± 140  
3540 BC

66°01'N, 28°30'E, 250 m a.s.l.

Charcoal from a buried soil horizon in a dune, 0.30 m depth.

Coll. and subm. 1979 by Y. Vasari.

Comment(YV): Dating of a deflation phase in the local history of inland dunes.

Hel-1287 KERAVA modern

Bone found from a gravel pit.

Subm. 1979 by P. Alhonen.

Hel-1288 KALMASAARI, JOROINEN modern

62°13'30"N, 27°36'E

Human bone, KM 20579.

Coll. by M. Suhonen. Subm. 1979 by A. Siiriäinen.

Comment(M Huurre): The name of the place indicates that it may have been used as a burial ground but no other finds than the grave from which the sample was taken have been made.

#### NUKKUMAJOKI SERIES, INARI

68°53'N, 27°05'E, 132 m a.s.l.

Coll. 1978 and subm. 1979 by C. Carpelan.

General comment(CC): The samples are reindeer bone from refuse heaps at an ancient lapp winter village. They represent short lived material and compared to charcoal and wood a more accurate date of the habitation.

Hel-1289

260 ± 90  
AD 1690

Bone between humus and mineral soil,  
KM 20278:42.

Hel-1290

270 ± 120  
AD 1680

Bone between humus and mineral soil,  
KM 20278:74.

Hel-1291 - 1294 LAUHANVUORI SERIES Hel-859

#### CULLENDULLA CREEK EMBAYMENT, NEW SOUTH WALES, AUSTRALIA

35°42'S, 150°12'E

Coll. and subm. 1979 and 1980 by J. Donner.

General comment(JD): The series of shell samples from near present sea level were dated in order to study the accuracy by which shell dates can be used in dating relative sea level changes and in the study of mollusc assemblages in shell beds.



Three ages are for shells from a midden on a beach ridge.

Ref. Donner and Jungner (1981).

Hel-1295	2180 $\pm$ 100 230 BC
1. <i>Notospisula parva</i> .	$\delta^{13}\text{C}=+2.06\%$
Hel-1296	1250 $\pm$ 90 AD 700
1. <i>Anadara trapezia</i> .	$\delta^{13}\text{C}=+1.03\%$
Hel-1297	1570 $\pm$ 90 AD 380
1. <i>Pyrazus ebeninus</i> .	$\delta^{13}\text{C}=+2.28\%$
Hel-1298	1360 $\pm$ 90 AD 590
1. <i>Ostrea angasi</i> .	$\delta^{13}\text{C}=+2.18\%$
Hel-1299	2380 $\pm$ 80 430 BC
2. <i>Notospisula parva</i> .	$\delta^{13}\text{C}=+1.98\%$
Hel-1300	1570 $\pm$ 110 AD 380
2. <i>Anadara trapezia</i> .	$\delta^{13}\text{C}=+0.38\%$
Hel-1301	3160 $\pm$ 100 1210 BC
3. <i>Notospisula parva</i> .	$\delta^{13}\text{C}=+2.18\%$
Hel-1302	2020 $\pm$ 120 70 BC
4. <i>Notospisula parva</i> .	$\delta^{13}\text{C}=+1.06\%$
Hel-1320	2470 $\pm$ 90 520 BC
5. <i>Notospisula parva</i> .	$\delta^{13}\text{C}=+1.34\%$
Hel-1321	630 $\pm$ 90 AD 1320
5. <i>Mytilus planulatus</i> .	$\delta^{13}\text{C}=+0.98\%$
Hel-1322	1870 $\pm$ 90 AD 80
6. <i>Notospisula parva</i> .	$\delta^{13}\text{C}=+1.25\%$

Hel-1323		350 $\pm$ 90
		AD 1600
7. <i>Notospisula parva</i> , from young beach ridge.		$\delta$ $^{13}\text{C}=+1.71$ ‰
Hel-1354		1930 $\pm$ 100
		AD 20
2. <i>Pyrazus ebeninus</i> .		$\delta$ $^{13}\text{C}=+2.10$ ‰
Hel-1355		700 $\pm$ 100
		AD 1250
5. <i>Polinices aulacoglossa</i> .		$\delta$ $^{13}\text{C}=+0.77$ ‰
Hel-1356		820 $\pm$ 90
		AD 1130
<i>Anadara trapezia</i> , midden.		$\delta$ $^{13}\text{C}=-0.29$ ‰
Hel-1357		820 $\pm$ 90
		AD 1130
<i>Pyrazus ebeninus</i> , midden.		
Hel-1358		830 $\pm$ 90
		AD 1120
<i>Ostrea angasi</i> , midden.		$\delta$ $^{13}\text{C}=-0.13$ ‰
Hel-1359		620 $\pm$ 100
		AD 1330
5. <i>Mytilus planulatus</i> (Hel-1321).		$\delta$ $^{13}\text{C}=+2.46$ ‰
Hel-1303	ANTREA, KORPILAHTI	9310 $\pm$ 140
		7360 BC
Bark from a float, bog find, KM 6688.		
Coll. 1913 by S. Pälssi. Subm. 1979 by A. Siiriäinen.		
An earlier submitted sample (1972 by V. Luho) revealed a date of 9230 $\pm$ 210 (Hel-269).		

Hel-1304 - 1309 OULANKA SERIES Hel-854

VANUTEHTAANMÄKI SERIES, SALO

9915.8 N, 525.20 E / 60°23'N, 23°08'E

Coll. and subm. 1979 by E. Linturi.

General comment (A Siiriäinen): An Early Iron Age habitation site with traces of house constructions, close to a large site complex containing habitation areas and burials. The dating

results, with numerous other results (see Katajamäki - Ketohaka series Hel-1182), confirm the occupation period of the whole site complex as ca. 2300 to 1300 BP.

Hel-1310	20610-1	1630 $\pm$ 90 AD 320
Charcoal from pit, 0.40-0.60 m depth.		
Hel-1311	20610-2	1650 $\pm$ 90 AD 300
Charcoal from a hearth, about 0.30 m depth.		

#### LUISTARI SERIES, EURA

61°05'N, 22°10'E

Coll. 1975 by P-L. Lehtosalo-Hilander.

Subm. 1979 by A. Siiriäinen.

Ref. Lehtosalo-Hilander (1982a, 1982b).

Hel-1312		350 $\pm$ 110 AD 1600
6779.05 N, 562.20 E, about 32 m a.s.l.		
Wood, KM 19877:15, about 0.40 m depth.		
Comment(P-LL-H): The sample is from a post found in clay underneath the remains of houses dated to the 16 <sup>th</sup> century.		
Hel-1383		2510 $\pm$ 120 560 BC
6778.71 N, 561.99 E, about 38 m a.s.l.		
Charcoal from a cairn, KM 20552:242, about 0.30 m depth.		
Comment(P-LL-H): The construction of the cairn as well as the ceramics found suggest an archaeological date in good agreement with the radiocarbon date obtained.		

#### GASGÅRDSTRÅSKET SERIES, PORVOO

60°21'29"N, 25°47'44"E, water level 25 m a.s.l.

Coll. 1978 and subm. 1979 by M. Eronen.

Hel-1313		4850 $\pm$ 140 2900 BC
Gyttja, 4.70-4.80 m depth.		
Comment(ME): Final disappearance of the Brackish-water diatoms after the isolation of the basin from the Litorina Sea.		

- Hel-1314 5750  $\pm$  100  
3800 BC  
 Gyttja, 5.10-5.20 m depth.  
 Comment(ME): Gyttja deposited after isolation of the basin from the Litorina Sea.
- Hel-1315 5660  $\pm$  130  
3710 BC  
 Gyttja, 5.20-5.30 m depth.  
 Comment(ME): The end phase of the isolation of the basin from the Litorina Sea.
- Hel-1316 5770  $\pm$  140  
3820 BC  
 Gyttja, 5.30-5.40 m depth.  
 Comment(ME): The beginning phase of the isolation of the basin from the Litorina Sea.
- Hel-1317 6140  $\pm$  150  
4190 BC  
 5.40-5.50 m depth.  
 Comment(ME): Brackish-water sediment deposited in the Litorina Sea just before of the isolation of the basin.
- Hel-1318 6510  $\pm$  160  
4560 BC  
 6.20-6.30 m depth.  
 Comment(ME): The rise of the *Tilia* pollen curve, T<sup>0</sup>.
- Hel-1319 6250  $\pm$  160  
4300 BC  
 6.80-6.90 m depth.  
 Comment(ME): Sediment deposited in the Litorina Sea. The date is obviously too young.

Hel-1320 - 1323 CULLENDULLA CREEK EMBAYMENT Hel-1295

SEASPRAY, VICTORIA, AUSTRALIA

Section: 38°22'S, 147°13'E

Present beach: 38°22'N, 147°12'E

Coll. and subm. 1979 by J. Donner.

General comment(JD): The shell samples from Seaspray date the upper shell bed inside the barrier whereas the samples from the present beach show that there is a mixture of shell

fragments of different species in the high energy beach sands (Donner and Jungner 1981).

Hel-1324	5200 $\pm$ 110 3250 BC
Notospisula parva	$\delta^{13}\text{C}=+1.00 \text{ ‰}$
Hel-1325	4770 $\pm$ 120 2820 BC
Katelsysia rhytiphora	$\delta^{13}\text{C}=+1.46 \text{ ‰}$
Hel-1326	4500 $\pm$ 120 2550 BC
Anadara trapezia	$\delta^{13}\text{C}=+1.22 \text{ ‰}$
Hel-1327	4700 $\pm$ 120 2750 BC
Ostrea angasi	$\delta^{13}\text{C}=+2.73 \text{ ‰}$
Hel-1351	8110 $\pm$ 130 6160 BC
Anadara trapezia	$\delta^{13}\text{C}=+0.38 \text{ ‰}$
Hel-1352	4080 $\pm$ 100 2130 BC
Fulvia tennicostata	$\delta^{13}\text{C}=+3.14 \text{ ‰}$
Hel-1353	290 $\pm$ 90 AD 1660
Plebidonax	$\delta^{13}\text{C}=+1.73 \text{ ‰}$

Hel-1328 - 1331 SKI SERIES Hel-803

Hel-1332 - 1335 PERÄPOHJOLA SERIES Hel-781

#### KITKANJOKI SERIES, NORTH-EASTERN FINLAND

Coll. and subm. 1979 by L. Koutaniemi.

Organic deposits of basal horizons in palaeochannels of various height in the Kitkanjoki valley. Dating of channels has been used in determining palaeocurrents of different age since the deglaciation. For Hel-1339-1341, see Koutaniemi (1981a).

Hel-1336	2110 $\pm$ 130 160 BC
7353.99 N, 483.40 E 1.17-1.20 m depth.	
Hel-1337	2120 $\pm$ 190 170 BC
7353.95 N, 483.40 E 2.07-2.10 m depth.	
Hel-1338	2160 $\pm$ 110 210 BC
7354.04 N, 483.36 E 0.68-0.70 m depth.	
Hel-1339	4710 $\pm$ 150 2760 BC
7353.61 N, 482.54 E 2.86-2.90 m depth.	
Hel-1340	5170 $\pm$ 160 3220 BC
7353.70 N, 482.42 E 0.87-0.90 m depth.	
Hel-1341	4960 $\pm$ 140 3010 BC
7353.7 N, 482.42 E 0.97-1.00 m depth.	
Hel-1342 - 1345	SKI SERIES
	Hel-803

## NÄSTINRISTI SERIES, LAITILA

Coll. 1979 by L. Väkeväinen. Subm. 1979 by A. Siiriäinen.

Hel-1346	4740 $\pm$ 100 2790 BC
Charcoal, KM 20606 (sample 1), about 0.50 m depth.	
Hel-1347	4710 $\pm$ 100 2760 BC
Charcoal, KM 20606 (sample 2), about 0.50 m depth.	

Hel-1348		4460 $\pm$ 130
Charcoal, KM 20606 (sample 3), about 0.60 m depth.		2510 BC
Hel-1349		4910 $\pm$ 130
Charcoal, KM 20606, about 0.50 m depth.		2960 BC
Hel-1350		4850 $\pm$ 130
Charcoal, KM 20606, about 0.50 m depth.		2900 BC
Hel-1351 - 1353	SEASPRAY	Hel-1324
Hel-1354 - 1359	CULLENDULLA CREEK EMBAYMENT	Hel-1295
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Hel-1362 - 1363	KETOHAKA SERIES	Hel-1110
Hel-1364 - 1367	LAUHANVUORI SERIES	Hel-859
Hel-1368	FINSPÄNG 275	2380 $\pm$ 80
Cross check, treatment and dating 1980.		
Peat, fraction insoluble in NaOH dated.		
St-6398: 2425 $\pm$ 90 (humus).		
St-6399: 2275 $\pm$ 90 (insoluble).		
Hel-1369	FINSPÄNG 310	3090 $\pm$ 80
Cross check, treatment and dating 1980.		
Wood, sample treated with HCl only.		
St-6444: 3010 $\pm$ 90 (untreated).		
St-6449: 3180 $\pm$ 90 (treated with NaOH).		

#### IIDESJÄRVI SERIES, TAMPERE

61°29'N, 23°50'E, 77 m a.s.l.

Coll. 1979 with a Livingstone sampler and subm. 1980 by P. Alhonen.

General comment(PA): The following datings on organic sediments of a small eutrophic lake provide data on its isolation

(emergence), sedimentation rate, biostratigraphy and environmental history. The most important dates are Hel-1370 for the beginning of the continuous curve of *Cerealia* type pollen, Hel-1371 for the beginning of the Sub-Atlantic Chronozones, Hel-1375 for the rational limit of *Picea*, and Hel-1379 for emergence (isolation) of the basin from the Ancylus Lake (according to diatom stratigraphy). This age is, however, too young because of a hiatus between banded sulphide clay and clay-gyttja (Alhonen 1981).

Hel-1370	2220 $\pm$ 130 270 BC
Gyttja, 0.50-0.60 m depth.	
Hel-1371	2610 $\pm$ 130 660 BC
Gyttja, 0.90-1.00 m depth.	
Hel-1372	3540 $\pm$ 140 1590 BC
Gyttja, 1.20-1.30 m depth.	
Hel-1373	3750 $\pm$ 110 1800 BC
Gyttja, 1.50-1.60 m depth.	
Hel-1374	4110 $\pm$ 110 2160 BC
Gyttja, 1.70-1.80 m depth.	
Hel-1375	4040 $\pm$ 110 2090 BC
Gyttja, 1.90-2.00 m depth.	
Hel-1376	5180 $\pm$ 100 3230 BC
Gyttja, 2.40-2.50 m depth.	
Hel-1377	5390 $\pm$ 140 3440 BC
Gyttja, 3.00-3.08 m depth.	
Hel-1378	5590 $\pm$ 90 3640 BC
Gyttja, 3.20-3.30 m depth.	
Hel-1379	6570 $\pm$ 140 4620 BC
Gyttja, 3.50-3.60 m depth.	



## KRAVIOJA SERIES, KOKEMÄKI

Coll. 1979 by T. Heikkurinen. Subm. 1979 by A. Siiriäinen.  
Charcoal samples from a Stone Age dwelling place.

Hel-1380	6060 $\pm$ 170
20584/Area I/1	4110 BC
Charcoal from a hearth, about 0.40 m depth.	
Hel-1381	5310 $\pm$ 110
20584/Area I/2	3360 BC
Charcoal, about 0.40 m depth.	
Hel-1382	5550 $\pm$ 100
20584/Area II	3600 BC
Charcoal, about 0.40 m depth.	

Hel-1383 LUISTARI SERIES Hel-1312

## AUTIOKENTTÄ SERIES, SODANKYLÄ

7513.21 N, 491.50 E / 67°42'N, 26°50'E, 197 m a.s.l.

Coll. 1979 by P. Honkanen. Subm. 1979 by A. Siiriäinen.

General comment(PH): Samples Hel-1384 and Hel-1385 are from different planks of a cottage floor within the Lappish dwelling site. Hel-1386 is from a hut within the same site. The date yielded by Hel-1385 is in good agreement with the archaeological dating of the site.

Hel-1384	modern
20585/I	
0.10 m depth	
Hel-1385	310 $\pm$ 130
20585/II	AD 1640
Hel-1386	modern
20585/IV	

Hel-1387 - 1389 SUBFOSSIL PINE SERIES Hel-807

Hel-1390 - 1395 PYHÄJÄRVI SERIES Hel-1241

OULUJÄRVI SERIES

Coll. and subm. 1979 by L. Koutaniemi.

General comment(LK): Wood and peat samples from different depths of the Oulujärvi Lake. The main problem to be solved is the transgressive evolution of the lake.

- |   |             |                       |
|---|-------------|-----------------------|
| Hel-1396  | ENONLAHTI   | modern                |
| 64°22.4'N, 26°45.5'E  |             |                       |
| Wood, 4 m below water level.  |             |                       |
| Hel-1397  | ENONLAHTI   | 460 ± 130<br>AD 1490  |
| Wood, 4.1 m below water level.  |             |                       |
| Hel-1398  | KURUNSUO    | 7120 ± 130<br>5170 BC |
| 64°20.3'N, 27°04.5'E  |             |                       |
| Humified peat, 0.465-0.490 m depth.   |             |                       |
| Hel-1399  | KAARESJÄRVI | 3700 ± 130<br>1750 BC |
| 64°24.6'N, 27°05'E  |             |                       |
| Sandy peat from the isthmus between Oulujärvi and Kaaresjärvi, 1.415-1.515 m depth. |             |                       |
| Hel-1400  | RYTÖLAHTI   | 3420 ± 120<br>1470 BC |
| 64°20'N, 27°05.3'E  |             |                       |
| Humified peat, 0.38-0.45 m depth.   |             |                       |

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HICKS, S.

Hel-  
 1238 Perälampi, Kuusamo  
 1269 Perälampi, Kuusamo

## HJELMROOS, M.

Hel-

756-760	Nimisjärvi, Utajärvi
774	Hailuoto
813	Ahvenjärvi, Alavojakkala, Tornio
883-885	Ahmasjärvi, Utajärvi
886-887	Järvelänjärvi, Vihanti
888	Kiimajänkä, Kemi
946-947	Ahmasjärvi, Utajärvi
948-951	Järvelänjärvi, Vihanti
955-956	Kiimajänkä, Kemi
960	Järvelänjärvi, Vihanti
961	Kiimajänkä, Kemi

## HUUTTUNEN, A.

Hel-

1176-1180	Ylimysneva, Parkano
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## HYVÄRINEN, H.

Hel-

775-779	Domsvatnet, Vardø
788	Sonkaja, Ilomantsi
842-845	Sonkaja, Ilomantsi
975-979	Masehjauri, Enontekiö
980-981	Petroskoi, USSR
989-993	Mukkavaaranlampi, Enontekiö
1037	Masehjauri, Enontekiö
1069-1072	Mukkavaaranlampi, Enontekiö
1082-1086	Råttuvarri, Norway
1087-1091	Alta, Norway
1130-1131	Bakunkärsträsket, Sipoo
1149-1150	Spåkenes, Norway
1266-1268	Odilampi, Espoo

## JUNGNER, H.

Hel-

674	Työtjärvi, Hollola
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737-740	Työtjärvi, Hollola
770-773	Työtjärvi, Hollola
823-826	Varrassuo, Hollola
827-830	Työtjärvi, Hollola
838-841	Varrassuo, Hollola
846	Varrassuo, Hollola
847-850	Työtjärvi, Hollola
863-866	Varrassuo, Hollola
908-911	Varrassuo, Hollola
923-926	Varrassuo, Hollola
1073-1074	Herttoniemi
1075	Lohtaja
1076	Espoo
1147-1148	Joupinkylä, Seinäjoki
1295-1302	Cullendulla Creek Embayment, New South Wales, Australia
1320-1323	Cullendulla Creek Embayment, New South Wales, Australia
1324-1327	Seaspray, Victoria, Australia
1351-1353	Seaspray, Victoria, Australia
1354-1359	Cullendulla Creek Embayment, New South Wales, Australia
1368-1369	Finspång

## KORPELA, K.

Hel-

780 Taivalköski

## KOUTANIEMI, L.

Hel-

854	Vihvilälampi, Kuusamo
855	Kourulampi, Kiutaköngäs, Kuusamo
857	Kotalampi, Liikasenvaara, Kuusamo
929	Oulanka, Kuusamo
935	Vihvilälampi, Kuusamo
936	Kourulampi, Kiutaköngäs, Kuusamo
937	Kotalampi, Liikasenvaara, Kuusamo
988	Oulanka, Kuusamo <sup>4</sup>
1207-1208	Babi Do, North-Poland
1245-1251	Liippasuo, Kuusamo
1252-1254	Siikauopaja, Kuusamo

1278-1279 Jäkälämutka, Oulanka, Kuusamo  
 1280 Rajavyöhyke, Oulanka, Kuusamo  
 1304-1307 Siikauopaja, Oulanka, Kuusamo  
 1308-1309 Nurmisaari  
 1336-1341 Kitkajoki, Kuusamo  
 1396-1397 Enonlahti  
 1398 Kurunsuo  
 1399 Kaaresjärvi  
 1400 Rytölahti

## KURIMO, H.

Hel-

783-787 Maanselämpuro, Posio  
 789-793 Perä-Puikkonen, Posio  
 873-874 Ärjenlampi, Posio  
 876-878 Paskalampi, Posio

## KURTÉN, B.

Hel-

858 Puistola  
 1073-1074 Herttoniemi  
 1075 Lohtaja  
 1076 Espoo

## LAPPALAINEN, V.

Hel-

930 Kukonmylly, Ristiina

## MARKGRAF, V.

Hel-

1270-1271 Lago Guzman, Jalisco, Mexico

## NÚÑEZ, M.

Hel

814-816 Retulansuo, Hattula  
 996-1000 Lammaslampi, Vantaa

OKKO, A.

Hel-

1196 Kärenlampi

PÉCSI, M.

Hel-

1203 Hódmezővásárhely, Hungary

1204 Törökszentmiklós, Hungary

1205 Mohács, Hungary

1206 Tiszaföldvár, Hungary

RACHOCKI, A.

Hel-

1191 Leba dune area, the north coast of Poland

1207-1208 Babi Do, North-Poland

REYNAUD, C.

Hel-

756-760 Nimisjärvi, Utajärvi

774 Hailuoto

883-885 Ahmasjärvi, Utajärvi

886-887 Järvelänjärvi, Vihanti

888 Kiimajänkä, Kemi

946-947 Ahmasjärvi, Utajärvi

948-951 Järvelänjärvi, Vihanti

955-956 Kiimajänkä, Kemi

960 Järvelänjärvi, Vihanti

961 Kiimajänkä, Kemi

RUUHIJÄRVI, R.

Hel-

954 Miehikkälä

SAARITSA, V.

Hel-

1219-1221 Isosuo, Klaukkala

## SAARNISTO, M.

Hel-

781	Ylempi Silmäslampi, Rovaniemi
782	Lompolojärvi, Pello
795-796	Ylempi Silmäslampi, Rovaniemi
797	Lompolojärvi, Pello
938	Iso Mustajärvi, Ylitornio
982-983	Valkiajärvi, Ruovesi
984	Lupojärvi
1021-1024	Valkiajärvi, Ruovesi
1114-1123	Valkiajärvi, Ruovesi
1332-1333	Lapinlampi, Ylikiiminki
1334-1335	Kaakkurinlampi, Rovaniemi

## SALOMAA, R.

Hel-

859	Spitaalijärvensuo, Isojoki, Lauhanvuori
860	Likolamminsuo, Kauhajoki, Lauhanvuori
861	Kälminkeidas, Isojoki
862	Kylmänkullaankeidas, Isojoki, Lauhanvuori
996-1000	Lammaslampi, Vantaa
1171	Haukilampi, Isojoki, Lauhanvuori
1172	Spitaalijärvensuo, Isojoki, Lauhanvuori
1173-1174	Likolammensuo, Kauhajoki, Lauhanvuori
1175	Kodesjärvi, Isojoki
1291-1292	Kauhajärvi, Kauhajoki
1293-1294	Juurakkojärvi, Kauhajoki
1364-1365	Spitaalijärvi, Isojoki, Lauhanvuori
1366-1367	Pieni Haapajärvi, Siikainen

## SANDBERG, E.

Hel-

812	Juojärvi, Outokumpu
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## SEPPÄLÄ, M.

Hel-

973	Lepp-1, Utsjoki
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974 Riskaskama, Vuotso, Sodankylä  
 1038-1041 Skallovaara, Utsjoki  
 1042 Alakilpisjärvi  
 1191 Leba dune area, the north coast of Poland

## SÖDERMAN, G.

Hel-  
 761-762 Palloneva, Jalasjärvi  
 763 Levitunturi, Sirkka

## TIKKANEN, M.

Hel-  
 1051 Kurkelansuo, Nakkila  
 1052 Nuottilampi, Pyhäjärvi  
 1081 Nuottilampi, Pyhäjärvi  
 1128-1129 Nuottilampi, Pyhäjärvi  
 1241 Mannilanlahti, Pyhäjärvi  
 1242-1244 Yläne, Pyhäjärvi  
 1360-1361 Yläne, Pyhäjärvi  
 1390-1395 Mannilanlahti, Pyhäjärvi

## TOLONEN, K.

Hel-  
 1053 Kunonniemi, Kitee  
 1094 Kunonniemi, Kitee  
 1132-1135 Varrassuo, Hollola  
 1140-1141 Kunonniemi, Kitee  
 1151-1163 Laaviosuo, Jahkola, Lammi

## TOLONEN, M.

Hel-  
 1099-1102 Kärkkä, Salo  
 1103-1106 Hakiala, Hauho  
 1107-1109 Kissalampi, Laitikkala, Pälkäne  
 1110-1111 Ketohaka, Salo  
 1112-1113 Likolampi, Salpakangas, Lahti  
 1126-1127 Ketohaka, Salo

1362-1363 Ketohaka, Salo

UUSINOKA, R.

Hel-

996-1000 Lammaslampi, Vantaa  
1147-1148 Joupinkylä, Seinäjoki

VASARI, Y:

Hel-

769 Pulkkila  
933-934 Hiilisuo, Petroskoi, USSR  
942-943 Hiilisuo, Petroskoi, USSR  
944 Pello  
1009-1011 Pieni Nääätälampi, Kuusamo  
1012-1015 Rajalampi, Kuusamo  
1020 Hiilisuo, Petroskoi, USSR  
1176-1180 Ylimysneva, Parkano  
1286 Lohiranta, Posio

VESAJOKI, H.

Hel-

1016-1017 Vierevänniemi, Höytiäinen  
1018-1019 Säynepuro, Höytiäinen  
1033 Vierevänniemi, Höytiäinen  
1034-1035 Suoniemi, Höytiäinen  
1036 Änäkälänniemi, Höytiäinen  
1136-1139 Tiaissuo, Polvijärvi  
1144-1146 Rapalahti, Kontiolahti

VUORELA, I.

Hel-

674 Työtjärvi, Hollola  
737-740 Työtjärvi, Hollola  
770-773 Työtjärvi, Hollola  
814-816 Retulansuo, Hattula  
823-826 Varrassuo, Hollola  
827-830 Työtjärvi, Hollola



838-841	Varrassuo, Hollola
847-850	Työtjärvi, Hollola
863-866	Työtjärvi, Hollola
908-911	Varrassuo, Hollola
923-928	Työtjärvi, Hollola
952-953	Vanajavesi
1031-1032	Vanajavesi
1142	Vanajavesi
1197-1200	Vanajavesi
1209-1210	Taruslampi, Sysmä
1211-1216	Kaakotinlampi, Sysmä

## VUORINEN, J.

Hel-

931-932	Hännisenlampi, Kitee
939-941	Hännisenlampi, Kitee
1053	Kunonniemi, Kitee
1094	Kunonniemi, Kitee
1140-1141	Kunonniemi, Kitee

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