

TARTU RADIOCARBON DATES V

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The following list includes samples dated in 1968 and 1969. Wood dating from A.D. 1850 \pm 10 yr is used as contemporary reference standard. Background sample is synthesized from anthracite or shungite. All radiocarbon dates were calculated with C^{14} half-life of 5568 \pm 30 yr. All dates are calculated from the year 1950.

I. GEOLOGIC SAMPLES

Remmeski series

Bog Remmeski 2 km SE of settlement Vastseliina, Võru Dist., Estonian SSR, formed under conditions of monticulate-morainic landscape of S Estonia. Bog with 118 ha area is composed of fen peat with average thickness 2.2 m (Veber *et al.*, 1961), at ca. +165 m. Sapropelite underlying peat indicates lacustrine origin of bog.

Samples coll. 1967 by E. Ilves, A. Sarv, Geol. Inst., Acad. Sci. of Estonian SSR and R. Pirrus, Geol. Inst., Acad. Sci. of Estonian SSR. Pollen analyses, after T. Nilsson (1961) by A. Sarv; botanical analyses by H. and J. Allikvee, Geol. Board, Estonian SSR.

TABLE 1
Stratigraphy of structure

Depth (cm)	Sediment type	Degree of decomposition (%)
0 to 95	wood and reed peat	55
95 to 105	wood and <i>Sphagnum</i> peat	45
105 to 135	wood and reed peat	50
135 to 215	reed peat	40
215 to 235	reed and <i>Bryales</i> peat	40
235 to 240	sedge peat	50
240 to 260	peat sapropel	—
260 to 283	sapropel, brown compact	—
283 to 285	sapropel, olive green, with plant remains	—
285 to 293	sapropel, brown compact	—
293 to 307	sapropel, olive green, containing aleurite with plant remains	—
307 to 355	aleurite, containing 4 to 6% carbon of organic origin	—

TA-205. Remmeski**2560 \pm 90****610 B.C.**Wood and reed peat at depth 20 to 25 cm. Pollen Zone SA₂.

- TA-206. Remmeski** **4550 ± 60**
2600 B.C.
 Wood and reed peat at depth 55 to 60 cm. Boundary of Pollen Zones SB₂ and SB₁.
- TA-207. Remmeski** **5280 ± 60**
3330 B.C.
 Wood and reed peat at depth 75 to 80 cm. Pollen Zone SB₂.
- TA-208. Remmeski** **5420 ± 70**
3470 B.C.
 Wood and *Sphagnum* peat at depth 95 to 100 cm, Atlantic/Sub-Boreal contact.
- TA-209. Remmeski** **6180 ± 70**
4230 B.C.
 Reed peat at depth 135 to 140 cm, Pollen Zone AT₂.
- TA-210. Remmeski** **6760 ± 70**
4810 B.C.
 Reed peat at depth 180 to 185 cm. Boundary of Pollen Zones AT₁ and AT₂.
- TA-211. Remmeski** **7690 ± 70**
5740 B.C.
 Sedge peat at depth 255 to 260 cm. Beginning of Pollen Zone AT₁ (transition of lacustrine stage to bog stage, empirical boundary of alder and spruce pollen, culmination of hazel pollen).
- TA-212. Remmeski** **8090 ± 80**
6140 B.C.
 Sapropel at depth 260 to 265 cm, Boreal/Atlantic contact.
- TA-213. Remmeski** **8380 ± 80**
6430 B.C.
 Sapropel at depth 265 to 270 cm. Boreal maximum of pine pollen.
- TA-214. Remmeski** **9610 ± 190**
7660 B.C.
 Sapropel with plant remains at depth 300 to 305 cm, overlying contact of DR₃ and PB.
- TA-215. Remmeski** **10,740 ± 130**
8790 B.C.
 Aleurite containing 6% of organic carbon at depth of 305 to 310 cm, lying immediately below contact of DR₃ and PB.
- TA-216. Remmeski** **10,770 ± 130**
8820 B.C.
 Aleurite containing 4% of organic carbon at depth 340 to 350 cm. Pollen Zone DR₃.

TA-248. Kirbla **6860 ± 60**
4910 B.C.

Fragments of pine stump from Kirbla, 10 km NE of settlement Lihula, W Estonia. Structure of sec.: fine-grained yellowish-gray sand 122 cm thick, pine stump, varved clay. Pollen analysis by H. Kessel refers sample to Pollen Zone V, Nilsson system. Coll. 1968 by H. Kessel, Geol. Inst., Acad. Sci. of Estonian SSR, subm. by G. Eltermann, Geol. Board, Estonian SSR.

TA-249. Vitosha **2550 ± 60**
600 B.C.

Fragment of juniper buried by inter-morainic (?) bog on Vitosha Mt. near Sofia, Bulgaria. Depth of sample 0.6 m below ground surface. Coll. 1968 by A. V. Shnitnikov and K. Janakiev, Limnol. Lab., Leningrad State Univ.; subm. 1968 by A. V. Shnitnikov.

Shalkar series

Submerged wood remains near Lake Shalkar, Volodar Dist., Kokcheta Reg., Kazakh SSR. Samples coll. 1965 to 1968 and subm. by A. V. Shnitnikov, Limnol. Lab., Leningrad State Univ.

TA-250. Shalkar-1 **1095 ± 60**
A.D. 855

Submerged root from SW bank of lake, depth 140 cm above lake, overlain by lacustrine sand.

TA-257. Shalkar-2 **700 ± 65**
A.D. 1250

Stump from bank of NE inlet, in silt beneath sand.

TA-256. Shalkar-3 **960 ± 60**
A.D. 990

Tree trunk from head of SE inlet, beneath lacustrine sand.

TA-267. Shalkar-4 **430 ± 60**
A.D. 1520

Submerged pine stump from NE bank, depth of 3 m, overlain by lake sediment.

TA-268. Shalkar-5 **895 ± 65**
A.D. 1055

Buried tree trunk from Peninsula at S end. Sample lying at depth 180 cm is attributed to 6th submerged layer.

TA-264. Shalkar-13 **845 ± 60**
A.D. 1105

Tree trunk from NE bank, depth 175 to 183 cm.

TA-251. Sista **7470 ± 90**
5520 B.C.

Wood from right bank of Sista R. 300 m upstream from highway bridge in Leningrad Region. Structure of sec., according to H. Viiding: sand grains of various sizes 270 cm; peat with plant remains

45 cm; bluish-gray clay 60 cm; gravel moraine 100 cm; Cambrian deposits. Coll. 1968 and subm. by H. Viiding, Geol. Inst., Acad. Sci. of Estonian SSR.

39,700 ± 850

TA-254. Peedu

37,750 B.C.

Woody peat from intermorainic bed near town Elva on NW elev. of Otepää, depth 760 to 780 cm. Coll. from borehole 1968 by J. M. Punning and E. Liivrand, Geol. Inst., Estonian SSR. *Comment*: dates of wood yielded 39,180 ± 1960 yr (TA-136, R., 1968, v. 10, p. 380).

31,200 ± 800

TA-254A. Peedu

29,250 B.C.

Same as TA-254, age determined from extracted humic substances.

4900 ± 60

TA-259. Epu

2950 B.C.

Peat from borehole 0.5 km N of Lake Tulisilla, Paide Dist., Estonian SSR. Depth 530 to 540 cm, from lower horizon of peat. Coll. 1968 by G. Kolmer and subm. by H. Elvre, Geol. Board.

6480 ± 60

TA-261. Eina

4530 B.C.

Valves of *Cyprina islandica* from S shore of Eina Bay, Rõbachij Peninsula, Kola Peninsula. Stratigraphy of sec., according to B. I. Koshetchkin: pebble and gravel 280 cm; fine-grained sand 80 cm; fine sand with abundant mollusk valves; greenish-gray clay. Coll. 1968 and subm. by B. I. Koshetchkin, Geol. Inst., Kola branch of Acad. Sci. of SSSR.

8440 ± 70

TA-262. Joelähtme

6490 B.C.

Woody peat from vicinity of village Joelähtme, 35 km E of Tallinn, N Estonia. Structure of sec., according to H. Kessel: humified soil 50 cm; wood peat 16 cm; bluish-gray clay 8 cm; moraine. Sample depth 0 to 5 cm from roof of organic layer. Pollen analysis by H. Kessel. Coll. 1968 and subm. by H. Kessel. Sample attributed to Pollen Zone VIII.

8745 ± 75

TA-263. Joelähtme

6795 B.C.

Woody peat from locality Joelähtme (see TA-262). Sample lying at depth 11 to 16 cm (from roof of organic layer) is referred to Pollen Zone VIII.

34,500 ± 450

TA-270. Tchapoma

32,550 B.C.

Shells from 35 km upstream from mouth of Tchapoma R., Kola Peninsula. Stratigraphy of sec., according to V. T. Evzerov; soil and plant layer 10 cm; thick-grained sand with gravel and pebble 580 cm; loam 335 cm; inequigranular sand 60 cm; pebble and rubble layer 180 cm; aleurite 220 cm; greenish-gray aleurite with shell fragments and

intact valves 185 cm; down to river level 120 cm. At distance of 100 m upstream aleurite can be seen overlying reddish-brown loamy moraine. Coll. 1968 and subm. by V. J. Evzerov, Geol. Inst., Kola branch of Acad. of SSSR.

TA-271. Ponoï**33,650 ± 400****31,700 B.C.**

Shells from left bank of Ponoï R., Kola Peninsula. Coll. 1968 and subm. by V. J. Evzerov.

II. ARCHAEOLOGIC SAMPLES

TA-252. Daugmale**1700 ± 60****A.D. 250**

Charcoal from outer defense works of township Daugmale, Riga Dist. on left bank of Daugerva R., 22 km SE of city Riga, Latvian SSR. Sample from upper part of 12th layer of rampart, Putative archaeologic age: Bronze age, ca. 1000 yr. B.C. or more recent. Coll. 1967 and subm. by V. Urtan, Latvian State Mus. of Hist.

TA-253. Daugmale**1770 ± 80****A.D. 180**

Charcoal from township Daugmale (see TA-252) from lower part of 12th layer of rampart. Coll. 1967 and subm. by V. Urtan.

TA-265. Sarnate**4630 ± 70****2680 B.C.**

Wood from remains of dwelling in peat cutting settlement Sarnate, Ventspils Dist., 40 km S of town Ventspils, Latvian SSR. Probable age: Neolithic (middle or 2nd half of 3rd millennium B.C.; see TA-24, TA-26, R., 1966, v. 8, p. 434). Coll. 1959 by L. Vamcina, Latvian State Mus. of Hist.

TA-238. Tamula**890 ± 60****A.D. 1060**

Peat from upper horizon containing finds of Late Neolithic settlement Tamula (see TA-10, TA-28, R., 1966, v. 8, p. 433), 16 to 20 cm below surface. *Comment:* archaeologic age of settlement: 1st half of 2nd millennium. Date confirms formation of given layer by late reprecipitation. Coll. 1968 by A. Liiva; subm. by L. Jaanits, Inst. of Hist., Acad. Sci. of ESSR.

TA-237. Tamula**4300 ± 70****2350 B.C.**

Peat from lowest horizon of cultural layer of Late Neolithic settlement Tamula (See TA-238). Putative age: boundary of 3rd to 2nd millennium B.C. Coll. 1968 by A. Liiva; subm. by L. Jaanits.

TA-245. Sindi**9600 ± 120****7650 B.C.**

Wood from Mesolithic settlement Sindi (Pulli) near Sindi RR bridge, on right bank of town Pärnu (See TA-175, TA-176, R., 1968, v. 10,

p. 382). Sample from depth 320 cm below ground surface, from layer containing archaeological finds. Coll. 1968 and subm. by L. Jaanits.

4830 \pm 80
2880 B.C.

TA-242. Usvyata

Wood from 4th horizon of cultural Layer B of Neolithic settlement Usvyata IV, Usvyata Dist., Pskov Region, RSFSR, on S outskirts of settlement Usvyata. Coll. 1964 and subm. by A. Miklyayev, State Hermitage of SSSR.

4510 \pm 70
2560 B.C.

TA-244. Usvyata

Wood from 3rd horizon of cultural Layer B of settlement Usvyata B. Sample taken from depth 125 cm below ground surface and belongs to same horizon as TA-105 which yielded age 4570 ± 70 (R., 1968, v. 10, p. 125). Coll. 1967 and subm. by A. Miklyayev.

4310 \pm 80
2360 B.C.

TA-243. Usvyata

Wood from 1st horizon of cultural Layer B of Neolithic settlement Usvyata IV, depth 70 cm below surface. Coll. 1967 and subm. by A. Miklyayev.

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