

## TARTU RADIOCARBON DATES IX

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The following list contains dates of organogenous sediments (peat and sapropel from the Karelian ASSR) made in 1972 to 1977 with the aim of studying the history of the development of peat bogs in the Holocene (Elina, 1969; 1971a,b; Pyavchenko *et al*, 1976). Samples were collected with Hiller or Instorf samplers. Borings were made in the deepest parts of the peat bogs.

Pollen analyses of all the sections described in this paper were conducted by V Tchatchkhiani; botanical analyses were made by L Belova. All samples were submitted for dating by the Institute of Botany, Karelian Branch of USSR Academy of Sciences.

Radiocarbon dates were determined by A Liiva and T Rinne, Biochemical Laboratory of the Institute of Zoology and Botany of the Academy of Sciences of the Estonian SSR.

Measurement of the activity of  $^{14}\text{C}$  was performed by liquid scintillation with the use of benzene. All dated samples were measured in parallel on two single-channel units. Radiocarbon dates have been calculated using  $5568 \pm 30$  as the half-life of  $^{14}\text{C}$ , with 1950 as the reference year.

### *North Karelia*

Region covers territory of Karelia from its N boundaries,  $66^{\circ} 30'$  to  $64^{\circ}$  N, excl SE Prebelomorje. List contains description of 16 samples of organogenous sediments coll from 9 peat bogs characteristic of different types of relief.

### **Ptichye series**

Ptichye bog lies in Louhi dist near Lake Sokol in glacial moraine plain, +120m. Fen peat bed, depth 7m. Two samples coll 1977 for dating by O Kuznetsov.

**TA-1021. Ptichye** **8600  $\pm$  100**

Sample from basal peat layer at 6.7 to 7m depth. Pollen analysis shows Boreal max of birch. *Comment*: date agrees well with palynologic materials from Kuusamo dist, Finland (Vasari, 1962).

**TA-1020. Ptichye** **6610  $\pm$  100**

Peat from 4.5 to 4.75m depth, contact of AT1/AT2. Empiric boundary of spruce pollen.

### **Neino suo series**

Neino suo peat bog lies in Louhi dist near Lake Sokol in glacial moraine plain. Alt +111.4m. Depth of fen peat, 5m. Two samples coll 1977 by O Kuznetsov.

**TA-1026. Neino suo** **8695 ± 100**

Benthic peat layer underlain by clay from 4.75 to 5m depth, contact of B01/B02.

**TA-1025. Neino suo** **7350 ± 90**

Peat coll from 3.75 to 4m depth, contact of B02/AT1.

**Mezhgornoye series**

Mezhgornoye (intermontane) bog lies in Louhi dist, S of Lake Sokol in deep basin with large ridge-like and hilly relief of denudate-tectonic genesis. Surface alt of bog 160m, ridges rise to +235m. Peat layer of bog is transitional, depth of organogenous sediments, peat and sapropel, 5.9m underlain by clay. Sample coll 1977 by O Kuznetsov.

**TA-1019. Mezhgornoye** **7920 ± 100**

Peat from 5.6 to 5.9m depth. Pollen analysis attributes age of sample to middle Boreal.

**Zapovednoye series**

Zapovednoye bog is in Kemi dist between settlements of Shombe and Kepa in slightly hilly moraine plain, +120m. Peat depth, 5.8m. Transitional peat deposit between fen and bog. Two samples coll 1977 by O Kuznetsov.

**TA-954. Zapovednoye** **899 ± 100**

Benthic peat layer from 5.5 to 5.8m depth underlain by clay. Pollen analysis shows Boreal max of birch (beginning of B01).

**TA-955. Zapovednoye** **6900 ± 100**

Peat from 4.7 to 5m depth. Pollen spectra indicate lower boundary of continuous curve of elm pollen (AT1).

**Shomba suo series**

Shomba bog is in Kemi dist near settlement of Shomba in undulating plain, +95 to 100m. Fen peat bed at 2.25m depth. Two samples for dating coll 1978 by O Kuznetsov.

**TA-1102. Shomba suo** **6945 ± 50**

Benthic peat from 2 to 2.25m depth underlain by clay. Pollen analysis indicates optimum of Atlantic period (AT1).

**TA-1103. Shomba suo** **3050 ± 60**

Peat from base of lakelet in ridge-pool lake complex 1 to 1.25m deep.

**Kepa series**

Kepa bog, Kalevala dist near Kepa settlement, in small depression in kame relief. Alt +125m. Peat deposit transitional; depth of organogenous sediments 4.9m. Two samples coll 1977 by O Kuznetsov.

**TA-1017. Keba 8995 ± 100**

Sapropel from benthic layer 4.7 to 4.9m deep in contact with sand. Pollen spectrum displays max of birch (B01).

**TA-1018. Keba 6115 ± 100**

Peat from 3.75 to 4m depth is in contact with sapropel. Pollen analysis displays optimum of Atlantic period (AT2).

**July suo series**

July bog, Kalevala dist W of Lake Kontokki, developed in narrow ravine in high-ridged denudate-tectonic relief. Borings of lacustrine bog sediments were carried out up to 6.5m depth. Sediments are made up to 5.75m of transitional fen peat and at 0.75m of sapropel. Two samples coll 1974 by O Kuznetsov.

**TA-738. July suo 7400 ± 100**

Sapropel from 6.25 to 6.5m depth, attributable to beginning of Atlantic period (AT1).

**TA-737. July suo 5700 ± 100**

Peat from 5.25 to 5.5m depth in contact with sapropel. Pollen analysis shows optimum of Atlantic period (AT2).

**Kontokki series**

Landscape bog, Kalevala dist SW of Lake Kontokki, occupies narrow depression in denudate plain, +202m. Fen peat bed, max depth of organic sediments, 7m. Six m of sediments are peat, 1m is sapropel underlain by clay. Two samples coll 1974 by G Elina and O Kuznetsov.

**TA-730. Kontokki 8000 ± 100**

Benthic sapropel, coll from 6.75 to 7m depth, from pollen analysis, assigned to Boreal period (B02).

**TA-729. Kontokki 3200 ± 60**

Peat from 4.25 to 4.5m depth. Pollen analysis shows Sub-Boreal max of spruce.

**No suo series**

No suo bog, Kalevala dist E of Lake Kontokki, occupies a narrow ravine between high eskers. Alt of esker ridges, +170m, relative alt of ridges, ca 8m. Boring exposed bore well, 8m deep. 4.25m of bore hole is transitional peat; 3.75m is sapropel. Sample coll 1972 by Elina and Kuznetsov.

**TA-581. No suo**

Sapropel coll near boundary of limnotelmatic contact at 4.75 to 5m depth. *Comment:* pollen spectra display optimum of AT1 and beginning and distribution of spruce.

*SE Prebelomorje*

This region unites territory of Prebelomorsk depression bordering on town of Belomorsk and Vyg R in W, on the boundary of Karelia with Arkhangelsk Region in E. Six samples from peat deposits of 2 bogs are listed.

**Zarutskoye series**

Zarutskoye bog, Belomorsk dist, SE of Nyukhcha village, on 3rd sea route of Prebelomorsk depression, +20m. Raised bog peat bed, maximum depth 8m, underlain by sea clay and loamy soil. Five samples coll 1975 by G Elina and V Antipin.

**TA-836. Zarutskoye** **8360 ± 100**

Peat, depth 7.5 to 7.85m, from contact zone of fen and transitional layers. *Comment:* pollen analysis shows Boreal age (B02).

**TA-835. Zarutskoye** **7120 ± 100**

Peat from 6.25 to 6.5m depth, ascribed by pollen analysis to 1st half of Atlantic period (AT1). *Comment:* dates appearance of spruce (empiric boundary).

**TA-834. Zarutskoye** **5575 ± 80**

Peat from 5 to 5.25m depth. *Comment:* pollen analysis indicates Upper Atlantic spruce pollen max.

**TA-833. Zarutskoye** **3500 ± 70**

Peat from 2.25 to 2.5m depth. *Comment:* assigned to Sub-Boreal period by pollen analysis. Dates Sub-Boreal max of spruce.

**TA-832. Zarutskoye** **1940 ± 60**

Peat from 1 to 1.25m depth. *Comment:* pollen analysis shows Sub-Atlantic max of spruce.

**Nyukhcha series**

**TA-837. Nyukhcha** **5010 ± 80**

Peat from 4.15 to 4.3m depth coll from Malyi Nyukhchensky Mokh bog, Belomorsk dist E of Nyukhcha village, on 3rd sea terrace of Prebelomorsk depression, alt 20m. Raised bog peat bed, depth, 5m. Sample coll 1975 by V Antipin. *Comment:* pollen analysis indicates end of Atlantic period (AT2) and empiric boundary of spruce pollen.

*Central Karelia*

Territory between 64°N and 62°N has been least thoroughly studied. Present list contains descriptions of 7 samples coll from 3 peat bogs.

**Chelmuzhi series**

Bog along Nemina R, Medvezhyegorsk dist E of Chelmuzhi village, has been compressed into narrow valley of Nemina R from which terrace sharply rises at alt, +6m. Three samples coll 1971 by G Elina and O

Kuznetsova from natural outcropping of peat bog with total thickness, 2.65m.

**TA-434. Chelmuzhi** **4480 ± 60**

Peat from 1.3 to 1.35m. *Comment:* pollen analyses shows that these peat samples were deposited at beginning of Sub-Boreal period.

**TA-433. Chelmuzhi** **4270 ± 70**

Strongly mineralized peat from 1.15 to 1.2m depth. *Comment:* pollen analyses indicate Sub-Boreal max of spruce.

**TA-432. Chelmuzhi** **2975 ± 60**

Peat from 0.7 to 0.75m depth. *Comment:* pollen analyses show Sub-Boreal/Sub-Atlantic contact.

#### **Chudesnoye series**

Chudesnoye bog, Medvezhyegorsk dist NW of Lake Segozero, occupies narrow depression of lacustrine-glacial plain, at +185m. Two samples of fen peat bed from 6m depth coll 1977 by V Antipin.

**TA-1023. Chudesnoye** **8450 ± 80**

Peat from 5.5 to 5.75m depth. *Comment:* pollen spectra show Boreal period for their deposition (beginning of BO<sub>2</sub>).

**TA-1022. Chudesnoye** **7760 ± 100**

Peat from 4.75 to 5m depth. *Comment:* pollen analyses indicate end of Boreal period.

#### **Dry Lamba series**

Dry Lamba bog, Kontopohja dist Kivach Nature Reserve, among high hills of limno-glacial montane relief, at +60m. Raised bog peat bed 8m deep. Two samples coll 1976 by V Antipin.

**TA-890. Dry Lamba** **8250 ± 80**

Peat from 7.75 to 8m. *Comment:* pollen analyses from 7.75 to 8m depth show middle of Boreal period.

**TA-889. Dry Lamba** **7360 ± 80**

Peat from 7.5 to 7.75m. *Comment:* pollen spectra show beginning of Atlantic period.

#### *South Karelia*

Territory S of 62°N has been studied rather thoroughly. The following describes 13 samples from 7 bog secs. *Comment:* materials of region under study obtained by authors agree well with data pub 1967 by K Tolonen on Finland (Tolonen, 1967).

#### **Bezdonnoye series**

Bezdonnoye bog is in Suoyärvi dist W of Lake Samozero in moraine aqueoglacial undulating plain lying in basin between 2 low ridges, at

+123m. Fen peat bed is transitional. Max depth of organogenous sediments is 13.5m of which 5.25m are made up of peat and 8.25m of sapropel. Four samples coll 1971 by V Antipin and O Kuznetsov.

**TA-535A. Bezdonnoye 9880 ± 150**

Sapropel from 13 to 13.5m from base of organogenous sediments. *Comment:* pollen spectra indicate absolute max of birch, which corresponds to beginning of Pre-Boreal period.

**TA-534. Bezdonnoye 9470 ± 150**

Sapropel from 120m depth. *Comment:* pollen analysis indicates contact of Pre-Boreal and Boreal periods.

**TA-533. Bezdonnoye 9085 ± 120**

Sapropel coll from 12m depth.

**TA-532. Bezdonnoye 5065 ± 70**

Peat from 5m depth near limnotelmatic contact of sapropel and peat. *Comment:* pollen spectra of these sediments correspond to contact of Atlantic and Sub-Boreal periods.

**Mustu suo series**

Mustu suo bog lies in Pryazha dist E of Kindasovo village in extensive basin of Shuisk lowland of limno-glacial origin (Apykhtin *et al*, 1965). Alt marks contact of bog and waterless valley at 102.5m depth. Bog peat bed transitional; max depth, 5.5m. Two samples coll 1973 by V Tchatchkhiani and O Kuznetsov.

**TA-579. Mustu suo 8670 ± 100**

Benthic, in contact with clay, peat from 4.75 to 5m depth. Pollen analyses indicate max of birch, which corresponds to Boreal period (end of B01).

**TA-578. Mustu suo 7600 ± 100**

Peat from 3.5 to 3.75m depth. Appearance of spruce pollen is noticeable in pollen-analytical spectra.

**Kindasovo series**

Nenazvannoye bog is in Pryazha dist N of Kindasovo village in higher ridges of Shuisk lowland, at +102.5m. Fen peat bed transitional, 4 to 4.5m deep, underlain by clay. Three samples coll 1974 by V Antipin and O Kuznetsov, 2 samples from bore well in center of bog, 1 from periphery.

**TA-838. Kindasovo 8460 ± 100**

Benthic peat from center of bog from 4.25 to 4.4m depth. Pollen analyses assign sample to Boreal period (B01/B02).

**TA-855. Kindasovo 4150 ± 40**

Peat from same site (0.75 to 1m depth). Pollen-analytical spectra (sharp decrease of spruce pollen) attribute sediments to 2nd half of Sub-Atlantic period.

**TA-779. Kindasovo 4070 ± 80**

Benthic peat from 2.32 to 2.6m depth on periphery of bog. Pollen analysis indicates Sub-Boreal age of sediments.

**Rittu suo series**

Rittu suo lies in Pryazha dist NE of Kindasovo village in limno-glacial plain at +100m. Raised bog peat bed from 3.15m depth. Sample coll 1975 by V T'chatchkhiani and O Kuznetsov.

**TA-580. Rittu suo 7900 ± 100**

Benthic peat from 2.4 to 2.7m depth, assigned by pollen analyses to end of Boreal period (B02).

**Koivu suo series**

Koivu suo in Pryazha dist borders on Rittu suo in W lying at +97.5m. Fen peat bed 1.5 to 2m deep. Two samples coll 1971 by V T'chatchkhiani and O Kuznetsov.

**TA-447. Koivu suo 5780 ± 100**

Peat from 1.3 to 1.4m depth underlain by clay. Pollen spectra show climatic optimum (AT2).

**TA-448. Koivu suo 2550 ± 70**

Peat from 0.8 to 0.9m depth. Pollen spectra clearly show contact of Sub-Boreal and Sub-Atlantic periods.

**TA-955. Hiili suo 8530 ± 80**

Peat from 5.5 to 5.8m depth from Hiili bog, Prionega dist SE of Petrozavodsk. Bog is on slope of individual elev massif at +147m. Fen peat bed transitional, max peat depth, 6m. Sample coll 1976 by V Antipin and O Kuznetsov. *Comment*: pollen analyses and dates show Boreal period for formation of these layers, contact of B01/B02, which do not confirm Donner's data (Donner, 1951) on formation of this bog in Late-Glacial period.

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