



## **History of the Environment and Stages of Development of the Area of Staraya Ladoga according to Data on Its Soils and Habitation Deposits**

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According to dendrochronological data, the town of Ladoga was founded in the middle of the 8th century AD (Kirpichnikov, 1985). The Ladoga fortress and adjacent ancient settlement are found near the inflow of the Ladozhka River into the Volkhov River. Under the habitation deposits, two buried soils were described. These soils are separated from one another by the 30- to 80-cm-thick layer of sapropel deposited during the Ladoga transgression.

The upper soil has a distinct plow horizons; the charcoal found in this horizon has the radiocarbon age within the interval from  $1415 \pm 90$  to  $1480 \pm 140$  BP (Ki-17316, Ki-18445). On the surface of the lower soil under the sapropel layer of the Ladoga transgression with a maximum about 3–4 ka BP, habitation deposits of the Neolithic Age were found in the area of the Ladozhka mouth. The humus from this soil has the radiocarbon age of  $4560 \pm 70$  BP (Ki-18100).

Habitation deposits of the medieval epoch have a thickness of 2.5–4 m and can be subdivided into two parts. The lower part is permanently waterlogged; it represents an organic-rich (>50%) layer. The upper part above the groundwater table has been subjected to decomposition and humification of the raw organic material. An organomineral layer has been formed there. Most of the samples from the lower layer are characterized by the high contents of phosphorus, calcium, sulfur, copper, and zinc. This may be related to the development of diverse industries in the past.

The history of the environment before the foundation of the town in the following way:

Accumulation of glacial sediments, > 10000 BP.

Formation of the lower buried soil before the beginning of the Ladoga transgression about 5ka ago.

Accumulation of lacustrine clay of the Ladoga transgression, 4500–3000 BP; the Volkhov River valley in that time represented a bay.

Inrush of the Neva River, 3000 BP; lowering of the lake level, drying of the terrace.

Development of the soil on lacustrine clay, 3000–1200 ago; during the latest stage of the development of this soil (1400–1200 ago), its upper part was involved in cultivation; in some places, alternation of the stages of plowing and settlement development in the 6th–9th centuries AD was seen in the soil profiles.

Burying of the soil under habitation deposits of the ancient town, 1200 BP.

Rise of the groundwater level and development of gley features in the buried soil (1200–present).