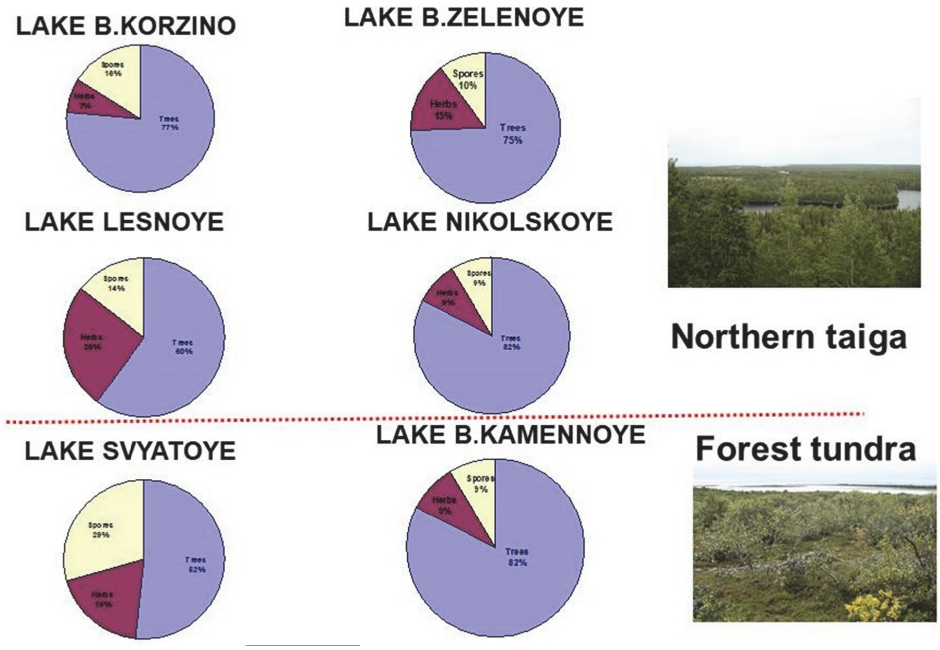

Fig. 1. Subrecent pollen spectra. Total percentage

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RESPONSE OF VEGETATION TO CLIMATE CHANGES DURING LATE GLACIAL AND HOLOCENE INFERRED FROM POLLEN RECORD OF LAKE ONEGA

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The seven cores of bottom sediments were collected for comprehensive studies during the joint expedition of the Saint-Petersburg State University, Center for Analysis of Seismic Data (Lomonosov Moscow State University) and Northern Water Problems Institute (Karelian Research Centre of RAS) in Lake Onega (Petrozavodsk bay) in 2016.

Basing on the seismic results, the two cores 3.2 m (ONG2) and 3.04 m (ONG5) thickness were selected. The water depth at the coring sites was 22 m and 23.3 m correspondingly. The ONG2 core is represented by Holocene sediments whereas the ONG5 core is represented mainly by late Glacial sediments. The excavated sediments in both cores are consisted on silt and clay with an admixture of sand, and underlying 1.12 m of the ONG-5 includes clay layers.

A total 50 samples from the ONG2 and 70 samples from the ONG5 with interval from 3 to 5 cm were analyzed for pollen and 42 pollen, spores, and non-pollen-palynomorph taxa were identified in the studied samples.

According to detailed palynological investigation bottom sediments of ONG5 core started to form during Allerød interstadial warming period. Tundra landscapes with *Betula nana,* possibly shrub *Alnus* as well as herbs were dominated on surrounding area in that time. The area occupied by periglacial vegetation communities with dominating *Artemisia*, Cyperaceae and Chenopodiaceae and participation of *Ephedra* increased during Younger Dryas period. Amelioration of climatic conditions in the beginning of the Holocene contributed to the reduction of territories occupied by vegetation of open habitats. However, the shrub and dwarf forms of *Betula* still dominated in the vegetation cover. This interval is attributed with the Preboreal period of the Holocene. The sharp changes in composition of pollen spectra were fixed above upper boundary of Preboreal. Probably, it is connected with hiatus in sedimentation. The rate of sedimentation sharp decreased at the same time. The uppermost 60 cm of sediments contain pollen and spores of the end of the Atlantic, Subboreal and Subatlantic period. End of the Atlantic period is characterized by the development of spruce and pine forests with the participation of *Alnus*, an admixture of *Ulmus* and *Quercus*. Participation of broadleaved species decreased, spruce and pine forests with *Betula* and *Alnus* were widespread during Subboreal time. Pine forests with *Betula*, *Picea* and *Alnus* participation are main feature of Subatlantic period as well as appearance of *Secale* and anthrophorous herbs at the end of the period.

The ONG-2 core is represented by sediments formed during the end of the Atlantic, Subboreal and Subatlantic periods according to pollen stratigraphy. Spore-pollen spectra received to allow more detailed reconstructed vegetation cover changes during the second part of the Holocene.

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BEENCHIME SALAATINSKY CRATER IN NORTHERN YAKUTIA - ORIGIN AND ENVIRONMENTAL DYNAMICS IN THE 8-KM CIRCULAR STRUCTURE

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Short-term scientific goals of our study are to reveal the origin of the crater (impact crater or volcanic crater) and the late Quaternary environmental history in the area. Beenchime Salaatinsky Crater (BSC) is a potentially multi-million-year-old ring structure that has a diameter of 8 km and is located west of the Olenyok River in northern Yakutia (Figure 1A). The altitude difference in the crater is around 60 m (140 m to 208 m above sea level) with forest tundra (i.e. larches) and shrubs and grass covering much of the area. The basin structure consists of three geomorphic levels: a lower level at 140-150 m asl. with polygonal frozen ground, partly boggy and filled with water in the meadows and with a drainage pattern that is seasonally active; a medium level at 150-165 m asl. has slopes and erosive remains of ancient fluvial terraces; the upper level at 165-208 m asl. consists of bedrock forming the crater rim. It includes a polygonal pattern from periglacial frost cracking in the weathered bedrock (Figure 1B).