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DIATOMS IN THE THANATOCOENOSIS OF THE LAKE ZAPOVEDNOYE (EVENKIYA)

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Diatoms are one of the main proxies of the lake condition in the past. In this work we present the first data on the composition and quantitative distribution of diatoms species from the bottom sediments of the lake Zapovednoe (Evenkiya).

Lake Zapovednoe (60° 31'N, 101° 43'E) is a freshwater lake located at the Verkhnyaya Lakura River in the Tunguska Nature Reserve, about 60 km from the settlement Vanavara. The lake is about 500 m in diameter, a round form and a depth about 47 m. Sampling was carried out in March 2015 from the ice in the central part of the lake with a gravity corer with removable plastic pipes with a diameter of 90 mm (UWITEC, Austria). Data on the distribution of ^{137}Cs and ^{210}Pb isotopes at the depth of the cores were used for preliminary dating of the upper layers (Darin, Kalugin, unpublished. Sub-samples were processed using 30% hydrogen peroxide and analyzed for diatoms by light microscopy (Bolobanschikova et al., 2015).

The results showed that the thanatocenosis of the lake Zapovednoye has a rich species composition of the diatoms. More than 40 genera of diatoms were found in the core. We emphasized several genera that play a major role in the quantitative and qualitative results of the analysis. The core has a several zones, in which abundance of these genera changed. Planktonic species correlated with other planktonic species: *Aulacoseira* sp. - *Lindavia* sp. - *Discotella* sp., and benthic species correlating with other benthic species: *Cocconeis* sp. correlated with *Cymbella* sp., and *Fragilaria* sp. correlated with *Epithemia* sp. (fig.1).

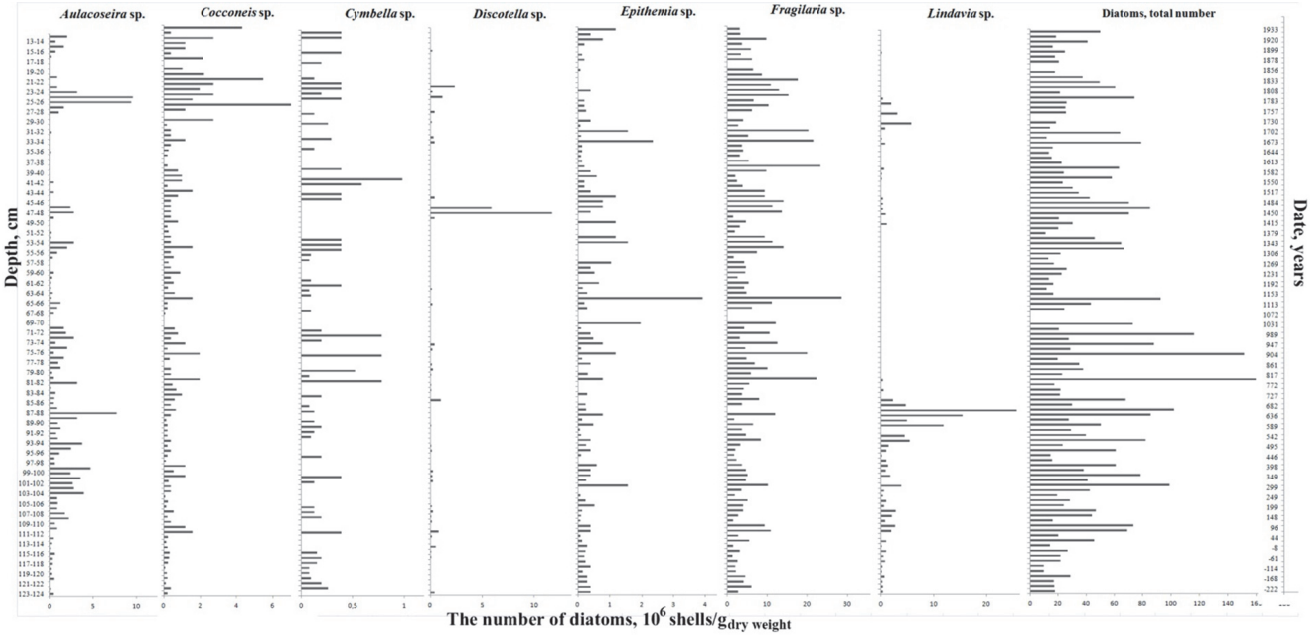

Fig. 1. Distribution of the diatoms in the bottom sediments of the Lake Zapovednoye

Also a periodic explosion of diatoms *Lindavia lemanensis* (Chodat) T.Nakov et al. and *Discostella stelligera* Cleve and Grunow) Houk and Kle are interesting. These species are known to be dependent on the ratio of nutrients - nitrogen (N) and phosphorus (P) (Saros, Anderson, 2015): the high concentration of these elements contributes to increasing of the number *Cyclotella sensu lato* species. Also the abundance of these species is influenced by the availability of light.

In all cases the maximum values of *L. lemanensis* and *D. stelligera* species were preceded by an increase of the number *Epithemia* sp., which has an endosymbiotic N-fixing cyanobacteria. It can be assumed that the change in the number of shells *Cyclotella sensu lato* is probably due to change in level of N-concentration in the lake. Also an increase in planktonic species was preceded by an increase in benthic species *Cymbella* sp., *Cocconeis* sp. and *Fragilaria* sp., except for the lower core layers. Perhaps this indicates the favorable conditions for benthic diatoms and probably entails an increasing of the eutrophication level and sedimentation rate for that moment. We suggest that the changes in the water level of the lake were a main cause of these changes.

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