



Biological proxies from sediments of Bolshoy Kharbey lake (Northern Russia) as indicators of ecological and climatic changes

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Northern ecosystems are the most vulnerable in the conditions of increasing anthropogenous influence owing to their specific characteristics. Climate change is most expressed in the Arctic and northern ecosystems are most unstable and especially sensitive to external ecological influences (Kienast F. et al., 2011; Dauvalter & Khlopceva, 2008). We investigated short sediment cores from lakes of Kharbey lake system, eastern part of Bolshezemel'skaya tundra in the northeast of Europe, about 67°31-36' N, 62°51-56' E and 129.8 m above sea level.

The situation in water ecosystems is reflected by zooplankton and benthic communities. Cladocera (Branchiopoda, Crustacea) is the most abundant group of a zooplankton occupying modern fresh-water reservoirs. Cladocera fossil assemblages in lacustrine sediments are increasingly important for reconstructing past ecological and climate change (Lotter et al. 2000; Ammann et al. 2000; Korhola et al. 2005), as these organisms are diverse, sensitive to limnological and climatic conditions and represent different compartments of lake ecosystems (Frey, 1988). In sub-fossil Cladocera assemblages from Harbey lake 22 taxa were identified. Sub-fossil Cladocera communities of Kharbey lakes are dominated by the taxa, which prefer large reservoirs. New for Northern Ural species *Camptocercus rectirostris* Schoedler, 1862 was found. Changes in structure of sub-fossil Cladocera assemblages towards modern time, appearance of new thermophilic planktonic species, change in ratio of planktonic and benthic species, increase of species abundance as indicators of growth of trophic status, indicate rise of the lake level, which is probably related to increase of the depth of a seasonal soil melting. Multiproxy study has shown that the major compositional changes in cladoceran, diatom, and chironomid communities are synchronous. The chironomid-inferred summer temperature rises during the last 100 years, which can be related to the end of LIA in the region and support previous investigations (Solovieva et al., 2005).