

CLADOCERA IN SURFACE SEDIMENTS OF THE LAKES OF THE KHATANGA RIVER BASIN

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The study of lake sediments allows us to reconstruct abiotic and biotic conditions of lake and its surrounding area. Of particular interest are studies of Arctic and subarctic ecosystems, due to lakes of current zones are exposed to minimal anthropogenic influence. Cladocerans (Cladocera: Branchiopoda: Crustacea) are a key component of aquatic ecosystems, which have been used often in paleoecological reconstructions of climatic and environmental change. Their chitinous exoskeletal components (head shield, shell, postabdomen, postabdominal claws, antennal segments, and mandibles) are usually well preserved after death in lake sediments [1]. Our research was conducted to study the composition of cladoceran community of lakes in the Khatanga River basin using paleoecological methods.

The study sites included 20 lakes distributed along a north–south transect across the Khatanga-river basin (70°40'02.1" to 72°24'09.8" N and 97°43'38.2" to 101°01'31.5" E) (Fig.1)

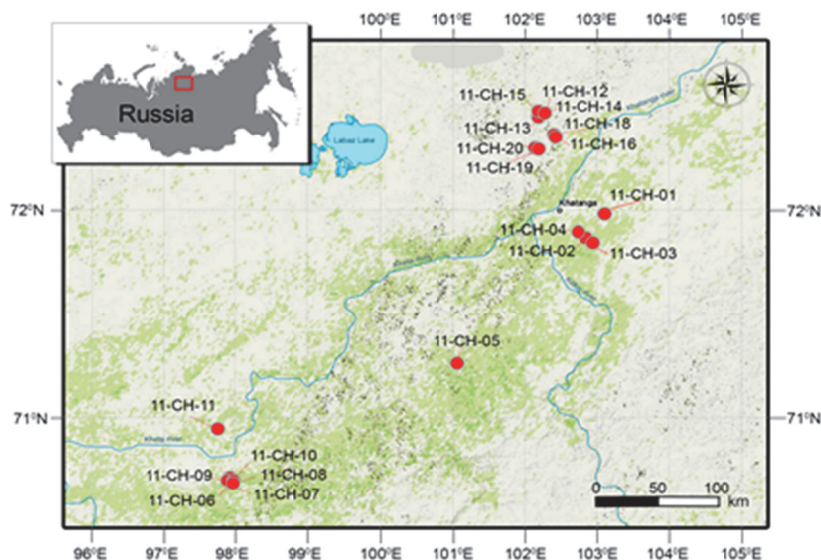


Fig. 1. Map of the studied region of the lakes of Khatanga river basin

Fieldwork was carried out as part of a joint Russian-German Expedition to the Khatanga region in 2011. The hydrochemical samples for each site were taken from the surface water layer (0.5-1 m) at the centre of each lake

The cladoceran remains were prepared according to Korhola and Rautio [2]. Each sample (2-5 g of fresh sediments) was boiled for half an hour in a 10% solution of KOH to remove humic matter and treated with HCl to eliminate carbonates. The Cladocera remains were screened using an Zeiss Axio Scope A1 light microscope. The cladoceran percentage diagram was created using the Tilia program, version 2.0.41 [3].

Twenty cladoceran taxa were identified in the 20 investigated lakes, belonging to six families (Fig 2). 12 taxa belonged to family Chydoridae, 3 taxa to Bosminidae, 3 to Daphniidae, 1 taxa to Sidaidae and 1 taxa to Macrothricidae.

Most abundant taxa were *Eubosmina longispina*, *Chydorus cf. sphaericus*, *Daphnia longispina*. Several taxa have been found for the first time for the Northcentral Siberia: *Eurycercus macracanthus*, *Camptocercus fennicus* and *Camptocercus lilljeborgi*. Most of the cladocerans in our investigation belonged to littoral species, which occur among macrophytes and in muddy substrate within the macrophyte zone at the lake margins. The littoral component was represented by *Chydorus sphaericus*,

Alona rectangulara and other taxa from the family Chydoridae. An increase of *Chydorus cf. sphaericus* is typical sign of increased level of nutrients and of eutrophication processes. In all lakes cladoceran assemblages are quite rich and diverse with relatively stable structure.

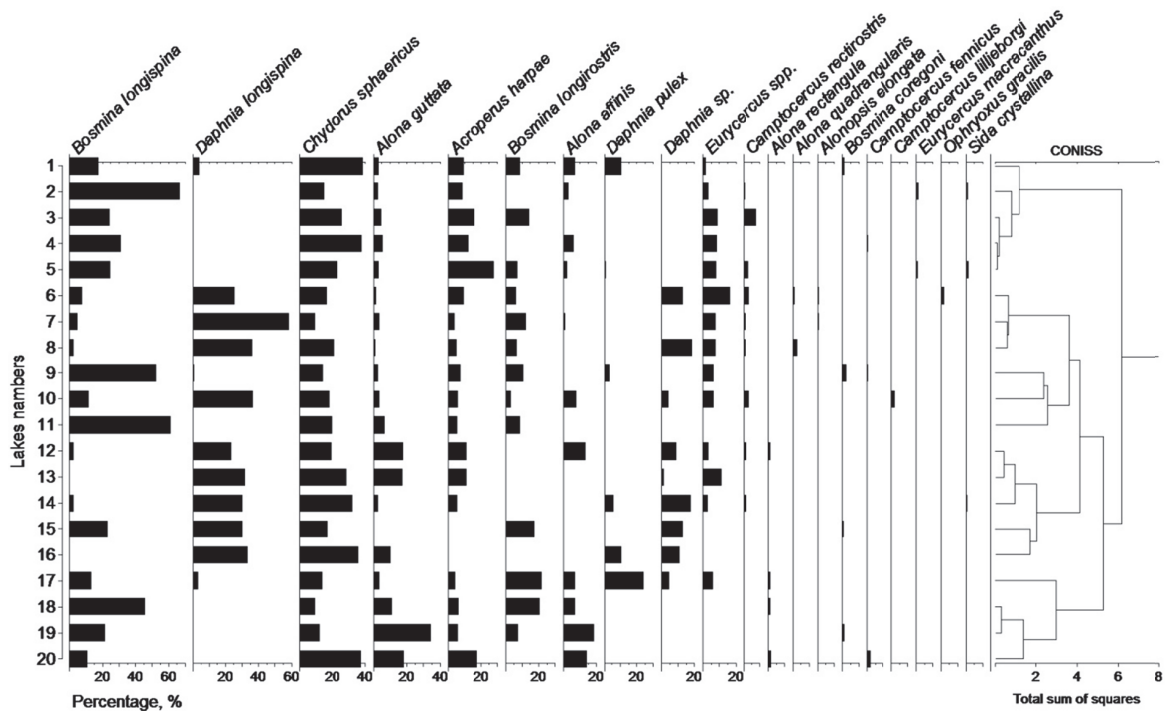


Fig. 2. Relative abundance of the cladoceran taxa in the lakes of Khatanga river basin

The average value of the Shannon index was 2.41, that allows to classify lakes as moderately polluted. The average value of the Pielou index was 0.80, that indicates the proximity to stable and aligned community structure. The index of the species diversity of Simpson was calculated, values varied from 0.53 to 0.85 (average value - 0.75), indicating a uniform distribution of species in the lakes.

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DIATOM COMPLEXES IN THE BOTTOM SEDIMENTS OF TURGOYAK LAKE (CHELYABINSK REGION, RUSSIA)

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The research species composition and ecological parameters of diatoms from lake sediments provide an informative historical record of changes in lake ecosystems. Reconstruction of past environ-