



## **Benthic bioindicators from the lakes of Northern Yakutia (Siberia, Russia) in paleoclimatic research**

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High latitude regions are particularly affected by global climate change. Aquatic ecosystems are known to respond quickly and sensitively to such changes (Carpenter et al., 1992; Findlay et al. 2001; Smol et al., 2005). This effect is especially dramatic in regions with continental climates such as Northern and Eastern Siberia. In 2008, Russian-German expedition investigated 33 lakes of Kolyma river basin, North-Eastern Yakutia. The region of investigation is located in the mouth of Kolyma river between approximately 68°2' and 69°4' N and between 159°8' and 161°9' E. It's a most north-eastern region of Yakutia, so it's suitable for paleolimnological investigations.

The investigated lakes are situated along the 200 km transect crossing 3 vegetation zones: polygonal tundra, forest tundra and northern taiga. The main aims were establishing a calibration dataset for paleoenvironmental reconstructions by using aquatic organisms, investigation of limnological variables and the influence of the environmental conditions on distribution of aquatic organisms in Yakutian lakes.

The modern benthic fauna of the lakes is represented by 89 taxa from 14 taxonomic groups. The most abundant group was Mollusca. The most taxonomically diverse group was Chironomidae. A unique for this region species were discovered, such as *Cincinna kamchatica*, *Physa jarochnovitschae*, *Colymbetes dolabratus*, *Ilybius wasastjernae*, *Xestochironomus* sp., *Agrypnia* sp. etc. Cluster analysis of taxonomical composition of the benthic fauna of these lakes showed high dependency to vegetation zones. The highest levels of hydrobiological indexes (Shannon, Evenness, species richness) were registered in forest tundra. CCA analysis showed that the most influential factors in species distribution were climate-dependant factors, such as mean Tair of July, pH and water depth. Data from taxonomical analysis of Chironomidae group were used for establishing a calibration dataset for paleoenvironmental reconstructions.