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GRANULOMETRIC COMPOSITION OF BOTTOM SEDIMENTS
IN THE DESALINATED BANNOYE LAKE
(White Sea, Oleniy Island)

Elena A. Vakhrameeva *

*N. Laverov Federal Center for Integrated Arctic Research,
Ural Branch of the RAS, Arkhangelsk, Russia*

The granulometric composition of bottom sediments of lakes reflects all processes occurring in the water body and within the catchment area. The GC of sediments is a function of the soil composition of the catchment, the dynamics of transport and sedimentation, and the physicochemical and biogeochemical conditions. Investigation of the GC is necessary to determine the nature of changes in the composition of BS along a section, with the aim of establishing the characteristics of the hydrological regime and changes in the water level regime of the lake in the past. To determine the GC, a method is applied for identifying six fractions of BS that determine the mechanism of organic and mineral material sedimentation in the aquatic environment. This is carried out using the pipette method in combination with the sieve method (FR.1.31.2018.29623). The calculation of fraction content is performed on an absolutely dry sample weight. The relative measurement error for all granulometric fractions ranges from 19% to 29%. Lake bottom sediments are classified according to N.A. Kachinsky. The study was conducted using the example of the poorly studied Bannoye Lake, which was separated from the White Sea by a stone dam during the construction of a timber mill on Oleniy Island in 1897 for the purpose of desalinating the lake water and using it to operate steam engines. Before the timber mill was built, this lake was a deep-sea bay extending far into the land. Within two years, the sea bay transformed into a fresh lake, which is still actively used today as a source of fresh water, domestic wastewater is discharged into Gorelaya Bay. Bannoye Lake did not attract the interest of scientists who had previously conducted research on a number of similar water bodies located at different stages of separation from the Kandalaksha Bay of the White Sea (E.D. Krasnova, 2021), and no studies of the lake have been carried out to date. The material for studying the current state of BS of the desalinated Bannoye Lake consisted of samples collected during the summer low water period of 2024 by employees of the Laboratory of Ecoanalytical Research, using a gravity corer (sampling interval 5 cm). The isolation and desalination of the lake created conditions for the accumulation and mineralization of the organic matter formed there, which can be estimated by the loss on ignition (LOI) content. The ratio of mineral and organic components was also determined in the identified granulometric fractions of the studied sediment samples. The identified differences in the granulometric composition of the sediments likely reflect stratification features associated with variations in sediment accumulation in opposite parts of the lake and the high productivity of organic material within the water body itself.

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References: Krasnova E.D. Ecology of Meromictic Lakes of Russia. 1. Coastal Marine Waterbodies. *Water Resources* **48** (3) (2021), 427–438.
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* **Corresponding Author:** Elena A. Vakhrameeva, Scientific Researcher, N. Laverov Federal Center for Integrated Arctic Research, Ural Branch of the RAS, Nikolsky Ave., 20, Arkhangelsk, Russia. E-mail: vakhr-elena@yandex.ru