

Specific features of the microbiota in the crater lake of east Kamchatka

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Investigation of recovery of centuries-old biota in the basin of the caldera lake and thermal basins of maritime territories is of interest in various aspects (including estimation of time necessary for recovery of trophic chains and description of conditions necessary for the development of volcanogenic-sedimentary formations of ancient calderas using a method of actualism). Over the period of 12 years the author has distinguished two stages of algae successions (Lupikina, 2005, 2008) with dominating allochthonous element and shifted at the 8th year seasonal complexes with dominating Bacillariophyta. Just as in previous years of investigations of biotic variations in Karymskoye Lake, we pay special attention to taxonomical composition and the amount of phytoplankton and periphyton on the south and north shores of the lake. The paper contains the data on standard horizons in winter-spring and summer time collected in Tokareva Crater and the central part of the lake using bathometer and the total amount of cells obtained using a net. In 2010-2011 the samples were collected periodically and hydro-chemical analyses were made with delay. The obtained results allow drawing the following conclusions. In spring time the representatives of *Aulacoseira italica* i.s. and *A. Subarctica* (O. Mull) Haworth were dominating in the water layer at S1 station. The amount of them reached 100-4500 cells per liter in bulk samples. Single specimens of valves of *Cyclotella tripartite* Hakansson and catenulars of *Fragilaria pinnata* Ehr., *F. crotonensis* Kitt accompanied them. Rare representatives of Cyanoprokaryota and Chlorophyta were not distinguished to species, but according to the size of single cells (no more than 2.5 mkm in diameter) they should be attributed to autotrophic planktonic forms. Over the period 2010-2011 a distinctive feature of diatoms complexes from the crater lake was a high concentration (from 20 to 62 percent) of teratological forms among *Diatoma*, *Flagilaria* and *Synedra*. We revealed four forms of anomalous formation of shells in several species and considered that they related to proteome and were the indicators. For the first time, transmission electron microscopy allowed us to reveal at ultrastructural level anomalies for single representatives of *Aulacoseira* and *Stephanodiscus* from Karymskoye Lake in pre-catastrophic (1976) period. This information is introductory, while detail morphological descriptions are archived. The author is sure that crater microorganisms will be attractive to biologists of different specialities, including geneticists and ecologists, who have interests in cause-and-effect relation.