

III

СТРУКТУРА И ПРОДУКТИВНОСТЬ ОЗЕРНЫХ ЭКОСИСТЕМ. ГЕТЕРОТРОФНЫЙ УРОВЕНЬ: БАКТЕРИОПЛАНКТОН, ЗООПЛАНКТОН, ЗООПЕРИФИТОН, ЗООБЕНТОС

STRUCTURE AND PRODUCTIVITY OF LAKE ECOSYSTEMS. HETEROTROPHIC LEVEL: BACTERIOPLANKTON, ZOOPLANKTON, ZOOOPERIPHYTON, ZOOBENTHOS

NUMBER AND DYNAMICS OF ZOOPLANKTON TAXA IN THE DAUGAVA RIVER AND RESERVOIRS PĻAVIŅAS AND ĶEGUMS

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The research summarizes the data collected during the research which was carried out in July 2014 in the Daugava River upstream of the Pļaviņas Reservoir, in the area of Pļaviņas Reservoir and in the place where the Aiviekste River flows into the Daugava River. By contrast, samples in the area of Pļaviņas Reservoir were collected in July and September 2015, but in the area of Ķegums Reservoir in May and July 2015. Zooplankton samples were collected at different locations of the river and reservoirs using Apstein type plankton net (65 μ), through which 100 liters of water were filtered from the water surface layer (0.5–1.0 m depth). At each sampling location the samples were collected on the left and on the right bank of the river and reservoirs, and in the middle of the river and reservoirs. In total, 7 zooplankton samples were collected in the Daugava River and 6 zooplankton samples were collected in the Pļaviņas Reservoir in 2014. By contrast, 19 zooplankton samples were collected in the Pļaviņas Reservoir, and 9 zooplankton samples were collected in the Ķegums Reservoir in 2015. At the same time the water physico-chemical parameters were measured using a portable probe *YSI Pro Plus Multi-Parameter Water Quality Meter*. Sampling and data analysis were carried out in accordance with the standard methods.

In general, 25 taxa of Rotifera and 2 taxa of Cladocera group were found in the Daugava River, and 19 taxa of Rotifera and 3 taxa Cladocera group were found in the Daugava River near Aiviekste. There were only subadult specimens – nauplii and Copepodite from Copepoda group. It should be noted that the specimens of Copepoda group were not found in the samples which were collected in the Daugava River upstream of the Pļaviņas Reservoir. By contrast, 23 Rotifera and 4 Cladocera taxa were identified in the Pļaviņas Reservoir in 2014. However, 17 Rotifera and 5 Cladocera taxa were identified in the Pļaviņas Reservoir in 2015. *Acanthocyclops* sp. *Cyclops* sp. and a large number of subadult specimens – nauplii and Copepodite were found from Copepoda group. 24 Rotifera and 17 Cladocera taxa were identified in September 2015. *Eudiaptomus graciloides*, *Cyclops* sp. and a large number of subadult specimens - nauplii and Copepodite were found from Copepoda group. 16 Rotifera and 3 Cladocera taxa and *E. graciloides* of Copepoda group were identified in the Ķegums Reservoir in May, and 22 Rotifera, 14 Cladocera taxa and *Acanthocyclops* sp. of Copepoda group in July. There were a lot of subadult specimens – nauplii and Copepodite both in May and in July.

In the Daugava River upstream of the Pļaviņas Reservoir the highest percentage of Rotifera taxa were *Synchaeta* sp., *Keratella cochlearis*, *Brachionus calyciflorus* and *Bdeloid*, whereas in the estuarine of the Daugava River at Aiviekste the highest percentage of Rotifera taxa were *Conochilus* sp., *Synchaeta oblonga*, *Synchaeta* sp., *Keratella cochlearis*, *Brachionus quadridentatus* and *Bdeloid* which were typical species of the Daugava. Cladocera and Copepoda compared with Rotifera have very small percentage of representatives. The highest percentage of Rotifera taxa in the Pļaviņas Reservoir are *Synchaeta* sp., *Br. calyciflorus*, *K. cochlearis*, *Polyarthra vulgaris*, *Polyarthra major* and *Asplanchna priodonta*. Cladocera and Copepoda groups are very little represented just like in the Daugava River upstream of the reservoir and at the Daugava River estuarine Aiviekste. Taxa of Cladocera found here were typical of lake zooplankton taxa i.e *Daphnia cucullata*, *Bosmina longirostris*, *Bosmina longispina*, *Bosmina crassicornis*, *Chydorus ovalis*. Rotifera taxa in the Ķegums Reservoir was mostly represented by *Synchaeta* sp., *K. cochlearis* and *P.a major*. While the Cladocera taxa was motly represented by *Bosmina coregoni*, *Ch. ovalis*, *D. cucullata*, *Diaphanosoma brachyurum*, *B. longispina*.

In 2014 the water temperature in the upper layer of the Daugava River and the Pļaviņas Reservoir was 23.5 °C, the dissolved oxygen concentration was 10.6 mg/l and chlorophyll α concentration 6 μ g/l. In July 2015 the water temperature in the Pļaviņas Reservoir was 21°C, the dissolved oxygen concentration was 12 mg/l and chlorophyll α concentration 5 μ g/l. While, in

September 2015 the water temperature was 19 °C, the dissolved oxygen concentration was 6 mg/l and chlorophyll α concentration 1.3 $\mu\text{g/l}$. In May 2015 the water temperature in the upper layer of the Kęgums Reservoir was 14 °C, the dissolved oxygen concentration was 9 mg/l, but in July 2015 the water temperature in the upper layer was 20 °C, the dissolved oxygen concentration was 11 mg/l and chlorophyll α concentration 4 $\mu\text{g/l}$.

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VERTICAL STRUCTURE OF ZOOPLANKTON IN KRONOTSKOYE LAKE (KRONOTSKIY PRESERVE, KAMCHATKA), AND FACTORS THAT HAVE AN IMPACT ON IT

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Kronotskoye Lake, one of the largest fresh water reservoirs of Kamchatka region, is located on the territory of Kronotskiy State Biospheric Preserve (N 54°47'11'' E 160°13'36''). The lake is connected with the Pacific Ocean by the Kronotskaya River, which flows into Kronotskiy Bay. Ichthyofauna of the lake is formed by complex of lacustrine chars (of genus *Salvelinus*) and natural population of lacustrine (resident) form of sockeye salmon – kokanee (*Oncorhynchus nerka kennerlyi* [Suckley]).

Studies of lake plankton were initiated in the beginning of the XX century. By the present time specific composition and specific structure of phyto- and zooplankton; seasonal and yearly patterns of quantitative characteristics and surface distribution of planktonic microalgae; specific structure of zooplankton and its seasonal and annual variability for single years; vertical distribution of zooplankton in late summer 2010; seasonal patterns of specific structure of meta-hypolimnion are revealed.

Goal of the particular study is to characterize seasonal variability of vertical distribution of zooplankton and to reveal the impacts determining the trend of developments.

Vertical distribution of zooplankton was investigated in the three locations: “bays», “islands», “outlet». Layerwise catches (0–10 m, 10–20 m and 20 m – bottom) by Juday net were conducted from the end of June till the