

## LONG-TERM CHANGES OF THE CURONIAN LAGOON ECOSYSTEM UNDER HARD EUTROPHICATION

**ELENA E. EZHOVA<sup>1</sup>, SVETLANA G. CHEPURINA<sup>1</sup> AND OLEG V. RYLKOV<sup>2</sup>**

<sup>1</sup> Atlantic Branch of P. P. Shirshov's Institute of Oceanology, Rus. Acad. Science, 236000 Kaliningrad, Russia.

<sup>2</sup> National park "Kurshskaja kosa", 238535 Rybachy, Kaliningrad region, Russia.

The Curonian lagoon (Baltic Sea) is shallow brackishwater basin divided between Russia and Lithuania. It is area of intensive controllable fishery and also resorts zone so it has high value for both countries. Environmental importance of the lagoon also high due to unique dune landscape at the coast, rich water rooted vegetation, nesting area of numerous, including rare, bird species and trans-European route of seasonal bird migration. The region is included at the UNESCO list of most valuable protected areas. Their ecological condition in the highest degree depends on functioning of the lagoon ecosystem but this one was deteriorating yearly and becomes critical now. Hydrobiological study of the benthic subsystem let to reveal some important problem of the ecosystem functioning. Since 30-thies till 50-60-thies of XX century an ecosystem state was sustainable. A constant species composition, small annual variation of average total benthic biomass (53-47 gr·m<sup>-2</sup>), stability of benthic animal assemblages and highest biological diversity during the century are evidences of this.

Since that time, the trend on decreasing of biological diversity on species and community level become evident. In 80thies, total community biomass remained in high level and tended to arise. Most evident progress had group of oligochaete worms (biomass up to 39 gr·m<sup>-2</sup>), consuming organic detritus from bottom sediments and preferring silt habitats. Parameters of distributional, biomass and density of long-living benthic animals, such as large-sized bivalves from *Unio*, *Anadonta* genuses and other mollusks, decreased sufficiently.

Arising of pelophylous species share is a first sign of re-structurization of food chains of communities in direction of simplification. In present time, this regressive development of benthos is in a deep stage. A lot of mollusk species formerly recorded in the lagoon are not found at all. Four or five previous main bottom communities disappeared and only one of them with predominance of oligochaetes and chironomids is widespread in the lagoon now. Total benthic biomass values are twice less than in 50-60-thies. Species diversity as far, as diversity of species assemblages, is at the minimal level. Extremely hard blooms of blue-green algae, following by oxygen deficiency in the near-bottom layer, are typical for the ecosystem now. All these phenomena contribute to deposition of excess production in the form of detritus in bottom sediments and further silting.

Several simple, rather cheap and social-oriented measures for maintain of some level of stability can be proposed: impressment of reed phytomass after birds nesting period, dredging of silt, mounting artificial substrata for better development of filtering mollusk *Dreissena polymorpha* population.