**The primary producers of sea ecosystem**

**under the influence of dredging.**

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The technogenic transformation of the water ecosystems under the dredging is one of the actual problems for the near-shore waters. The microscopic algae which are suspended in waterbodies are the main primary producers and the base of food webs in the seas. The increasing of suspended matter and different substances input from the bottom sediments by the result of dredging is affected for the phytoplankton in different ways. It leads to a decrease in the thickness of the photic layer, which negatively affects the photosynthetic activity of algae. Suspended particles extend a damaging effect on filamentary, cenobiar and colonial forms of algae. At the same time, organic matter and biogenic substance which are transferred from the bottom sediments can inspire algae growth. [1].

The water area of the Eastern part of the Gulf of Finland near the St-Petersburg is influenced by the large-scale dredging which connected with the seaports construction and other dredging works.

The phytoplankton from two second bays of the Gulf of Finland was investigated under the influence of dredging: the Luga Bay (in 2005-2019 during the period of Ust-Luga commercial seaport construction) and the Neva Bay (at the first years of Multipurpose Sea Cargo Complex Bronka construction in 2011-2015). The investigation of phytoplankton development took part in the different seasons of the ice-free period in the water areas of dredging, damping, and near-situated areas. The Luga and Neva bays phytoplankton was formed previously by the cosmopolitan and eurybiontic species which are typical for the Eastern part of the Gulf of Finland [2]. The most quantitative development was marked for cyanoprokaryotes, cryptomonads, diatoms, and green algae.

The investigation in the south-west part of Neva Bay was carried out during the intensive dredging. At the first steps of port construction in 2011 the structure and quantitative development of phytoplankton on the seaport water area were typical for Neva Bay according to periods of seasonal succession. In 2013-2015 on the water areas of offshore civil works the evidence of the negative influence of dredging as decreasing of total biomass, a number of filamentary forms of cyanoprokaryotes and increasing of the proportion of mixotrophic cryptomonads were marked. The benthic form of diatoms invaded to the phytoplankton from the bottom. The negative correlation between phytoplankton biomass and concentration of suspended matter (r = - 0.57, p = 0.01) were detected.

Similar changes in phytoplankton were detected in some periods of investigation in Luga Bay. Apart from cryptomonads part biomass, the increasing of the proportion of other mixotrophic groups as euglenoids and golden algae was remarked.

At the same time by the results of the investigation, the fast recovery of the phytoplankton structure after the dredging was detected.

According of longstanding investigation the trend for changing of Luga Bay phytoplankton structure and its quantitative characteristics was not found. The certain differences between the quantitative development and composition of the dominant phytoplankton complex on the water areas of dredging, damping, and adjacent areas in the main part of investigation were not observed.

The quantitative indicators of phytoplankton development were varied from year to year in all seasons of 2005-2019 but they kept in frames of values which previously observed for the water area of the Luga Bay [3]. The influence of the trend for increasing average annual water temperatures on phytoplankton development was not traced.

The stable state of Luga Bay ecosystem primary producer is indicator of the preservation of its production resource.

**References**

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