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Coastal and marine ecosystems, biology and ecology

Eco-monitoring Of Dredging In The Gulf Of Finland

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In 2012 the Strategy of port's infrastructure development to 2030 is passed in Russia. In this document the main principles of development and enhancement of ports and adjacent coastal zone is represented in conception of technospherical safety of activity extension. Currently, in the Eastern Gulf of Finland construction and enlargement of new and existing ports like outer harbour "Bronka", "Ust-Luga" and so on is made. Construction of ports and channel and also land creation for port infrastructure is intimately connected with dredging and raised coastal works. Carrying out of hydrotechnical works is involved to significant restructuring of ecosystems in adjacent to construction work zones, and ignore of building influence might bring to loss of breeding and feeding sites of fish and another valuable biological species of fishery. The program of Ecological Monitoring of Dredging and Reclamation (EMDR) is suggested for searching of main influences on the environment conditions. This program was elaborated of experts from RSHU and SPbSTU, on base of which the investigations and assessment of water area quality in regions of building and soil disposal to underwater disposal sites were made for the Eastern Gulf of Finland. Principal questions and goals of the EMDR are: (1) revealing of the short- and long-term environmental effects from dredging and reclamation, and establishing the difference between the natural and anthropogenic trends of the coastal ecosystems near the dredged material deposit sites; (2) estimation of reversibility / irreversibility of trends / changes in coastal ecosystems due to influence of dredging and reclamation; (3) finding the ways of minimizing and compensation of negative effects on the coastal environment. As results of ecological monitoring in the Eastern Gulf of Finland before and after construction works of hydrotechnical objects, the main factors of influence on benthic communities and coastal zones in whole were determined. On the basis of the field works results laboratory experiments for determine a level of effect of turbidity, thickness of sedimentation and frequency of discharging on benthic communities were made. By the results of work it is shown that regular investigations in the region of dredging and reclamation works is necessary for selection approaches and safe environment technologies for realization of hydrotechnical works in conception of technospherical and ecological safety of the environment.