

*Природопользование и охрана окружающей среды***THE PROBLEMS OF THE MODERN CONDITION OF COASTAL SEA ECOSYSTEMS OF THE KOLA NORTH**

Ovchinnicova S., Shirokaya T., Crivenko O,  
Chernyakov S., Mychnuk O., Pocholchenko L.,  
Timakova L.

*Department of Biochemistry, Faculty of Biology,  
Murmansk state technical university,  
Murmansk*

Economic development of the seas is accompanied by growth of anthropogenous influence on sea ecosystems. Ecosystems of the Arctic seas are in this respect most vulnerable. They are distinguished by natural vulnerability and the increased sensitivity for loadings.

Problems of steady development of a coastal zone of World ocean have sharply become aggravated in second half of XX century, and obviously, will keep the actuality in the future.

The coastal zone differs specificity of hydrochemical and hydrological modes, faunistic complexes, bioproduction processes, the greatest efficiency and a high biological variety of ecosystems. Coastal waters accept and assimilate all volume of the pollution, acting from river pools and directing from sea coast, that can result to degradation changes in sea ecosystem.

The increased content of toxicants in water results in their accumulation in ground adjournment and hydrobionts, creating potential danger for the person.

In this connection the estimation of an ecological condition of coastal sea ecosystems of the Kola North in conditions of anthropogenous pollution is rather actual.

For a complex estimation and forecasting of change of a condition of natural ecosystems measurements of their chemical and biological parameters have the important value.

The basic purpose of work was biochemical and hydrochemical indication of a condition of Kola bay as coastal sea ecosystem of the Kola North in conditions of anthropogenous pollution. Kola bay - the largest fiord of Kola Peninsula, having great importance for fish industry and over the long time functioning in conditions of anthropogenous loading of a high level. At the same time, Kola bay is difficult hydrochemical object, a barrier geochemical zone. Waste waters, containing multicomponent mixtures of pollutants of both mineral and organic origin, enter the coastal waters of the bay.

We research the space-time variability of hydrochemical parameters of Kola Bay. Excess of a maximum permissible level under the contents of ammonium nitrogen, phosphates, iron first of all for a southern knee of a gulf is marked. The data, received by us on spatial distribution of hydrochemical parameters, reflect inversely proportional dependence of concentration of biogenic substances on salinity on water area of a gulf. In the direction of an open part of a gulf it is possible to explain decrease of a level of pollution of water by functioning of system of autopurification of waters of a gulf.

Actual problem, especially in conditions of the given region, is the estimation of influence of pollution on a state of hydrobionts. For the decision of the given prob-

lem the most acceptable are biochemical researches of hydrobionts as components of water ecosystems of the Kola North since organisms are capable to answer very quickly on changes of factors of an environment by reorganization of a chemical compound and biochemical mechanisms that allows to use the given parameters for an estimation of biological effect of pollution.

We investigated a chemical compound and biochemical properties of some trade kinds of fishes, characteristic for Kola bay and a coastal zone of the Barents sea, such as cod *Gadus morhua morhua*, the haddock *Melanogrammus aeglefinus*, the polarcod *Boreogadus saida* etc. According to the received data, the dynamics of the contents of the basic chemical parameters (water, total nitrogen, amine nitrogen, water-soluble protein, lipids) in investigated hydrobionts are carried with a seasonal nature; the given parameters depend on a stage of life's cycle. Our researches concern such problem as ecological biochemistry of fishes of North Basin. The important task of modern ecological biochemistry is search of the effective biochemical markers reflecting a degree of response of an organism on action of polluting substances at a molecular level and having the important value for bioindication of a state of hydrobionts. We, from positions of revealing of biomarkers, estimate activity of the proteases in the muscle tissue of northern fishes, the contents of macroergic compounds (АТФ), antioxidants (tocopherol, retinol). Effective molecular indicators enable to determine the mechanism of biochemical adaptation of fishes.

The data of our investigation show that this research is actual for complex estimation of state of coastal marine ecosystems of North Basin in conditions of anthropogenous pollution.

**СОВРЕМЕННОЕ СОСТОЯНИЕ ДОННЫХ БИОЦЕНОЗОВ ЗАПАДНЫХ ПРИБРЕЖИЙ СРЕДНЕГО КАСПИЯ**

Алигаджиев М.М., Османов М.М., Амаева Ф.Ш.  
*Прикаспийский институт биологических  
ресурсов Дагестанского научного центра,  
Махачкала*

Исследования 2001 года показали, что азово-черноморские вселенцы являются преобладающими в биоценозах прибрежной части дагестанского района Среднего Каспия до 10-метровых глубин, где их доля достигает 70-80 % в общей биомассе бентоса. В исследованном в 2002-2003 гг. более глубоководном районе Каспия эти данные меняются. Показатели видового разнообразия остаются на том же уровне, что и в предыдущие годы, но доля автохтонных организмов в биомассе бентоса резко увеличивается, изменяясь на разных разрезах, но в среднем близка к 50 %.

Митилястер, абра, нерейс, балянус и церастодерма образуют с местным населением определенную систему биоценологических взаимоотношений. Занимая доминирующее положение в донных биоценозах, они заселили различные участки водоема и, развиваясь, создали ряд новых естественных сообществ.