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THE FUTURE, EU EXPERIENCE**

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ENVIRONMENTAL ASPECTS OF FORMING THE DANUBE LAKES ECOSYSTEM

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In the northwestern part of the Black Sea there are some of the most interesting water bodies that are a part of the river delta and belong to one of the largest lake type water bodies in Ukraine. The conditions of their formation (different morphology of the coastal areas, a presence of flowing rivers, a water exchange with the sea) have led to forming the water bodies different in their hydrochemistry, hydrology and biology. These objects are unique due to their various forms and the extent of their interaction with the sea and a various degree of river runoff [1-2].

In the Odessa region there are more than a dozen large water bodies with different salinity, which creates a variety of conditions for the existence of hydrobiota. In this case different in their characteristics biotopes and communities are formed. Within a relatively small area there is a large diversity (from fresh to ultragaline) of aquatic organisms. It is known that the mineralization of water is one of the main factors that forms a structure and a large number of biota in the water bodies. In the Odessa region there are water bodies with salinity of water from almost freshwater to ultragaline (up to 300 g / l). Such territories are not so common in other regions of the world, which makes them unique. Similar complexes of the water bodies with different salinity exist in the steppe zone of Khakassia and Western Siberia in Russia, Australia, the USA and some other regions of the world, but only the water bodies of the Odessa region have a constant or periodic connection with the sea. As a result a set of organisms in the water bodies of the Odessa region is represented by the species of both freshwater and marine origin [1-2].

After regulation of the Danube River in its middle part in the area of the Iron Gate, as well as the extraction of the Danube lakes floodplain, the space-time characteristics of water exchange during the flood period were disturbed. Despite a presence of floodgates in the dams, the water exchange has decreased significantly

[3]. This is evidenced by the fact that earlier the indicators of total mineralization in the lakes were even lower than in the Danube River as the water bodies were filled with flood waters. In the study area simultaneously with the fishery development of the water bodies the irrigation began to develop rapidly, water using for industrial and economic needs increased and, as a consequence, the indicators of aquatic pollution dramatically increased. Nowadays the lakes have become receivers of drainage, domestic and industrial sewage, they have accumulated water contaminated with toxicants and toxic chemicals not only from the Ukrainian territory but also from the neighboring state – Moldova [4].

For a number of years in spring and early summer there is a mass loss of fish and other aquatic organisms in the Danube Lakes. In 1988, 1995, 1996 and 1998 this phenomenon acquired a scale of an environmental disaster. Thus in 1998 more than 2000 tons of commercial fish died, and the same thing on a smaller scale repeated in 1999 and 2000. This negative phenomenon is primarily associated with the process of cumulative toxicosis which is characteristic for the water bodies with eutrophied and polluted waters (Braginsky, Davydov, 1998) [5-6].

In addition to a fish death water pollution (especially toxic) causes negative changes in the structure of coenoses of other aquatic organisms. The development and suppression of bottom invertebrates are oppressed, in particular macrozoobenthos – a fish forage base of any water body, indicators of biodiversity, abundance and biomass are reduced [7].

However in recent years despite an increased anthropogenic pressure on the studied aquatic objects, their ecosystems continue to play one of the most important biosphere functions – energy-mass interchange contact zones. They are still characterized by increased biodiversity, enhanced activity of physiological and biochemical processes. In view of this and the current status of these water bodies in the region's natural-economic system, the ecosystems of the Danube waters require in-depth study in order to stabilize and restore their structural and functional characteristics. The next step is to develop a system of practical measures to restore and maintain the ecosystem sustainability of the water bodies [7-8].

The main threats to the biodiversity of the aquatic ecosystems of the Danube lakes are [9-10]:

1. overusing natural populations of aquatic organisms (fish, invertebrates, algae, etc.);
2. using fishing gear and methods that destroy communities and their habitat;
3. polluting with:
 - petroleum products and drilling fluids from mining companies, as well as a result of pipeline crashes;
 - emissions from water transport and ports;
 - wastes from industrial enterprises and domestic runoff: heavy metals, phenols, surfactants and other pollutants brought by the waters of the Danube;
 - agricultural wastes: compounds of phosphorus, nitrogen, pesticides, etc.;
4. invasions of alien species.

In general at present the Danube ecosystems are in a depressed state and are losing their ecotonic function.

In this regard a favorable ecological status of a Danube lakes ecosystem is of great importance, as today these water bodies are very promising for the development of mariculture in the region.

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