

POTENTIALITY OF THE EASTERN SIVASH'S AQUATIC LIVING RESOURCES USE

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It was declared by Convention of Biological Diversity (Rio-de-Janeiro, 1992), that its conservation and sustainable use is the common problem of all mankind. Due to their considerable productivity wetlands are able to maintain biotic diversity at the highest level.

Ukraine became the successor of the Ramsar Convention in 1996. Since that time network of wetlands having international status, has had 33 sites with the total area of 676,251 ha. One of the most valuable wetlands located in the Western Pryazovya is the Eastern Sivash. It is the part of the shallow, lagoon-like bay on the west of the Sea of Azov, in the south of Ukraine. The Eastern Sivash has an area of about 1,650 km². Its considerable ecological role is determined by the unique ecological and geographical conditions, a large landscape and biological diversity. In addition to an ecological role wetlands also have social, cultural and economic significance, as they can be seen as the waters in which sport and industrial extraction of aquatic living resources is possible.

One of aquatic living resources most promising for extraction in the waters of the Eastern Sivash is a mosquito grub – larvae of several species of mosquitoes families Chironomidae Jacobs, 1900, and gammarus – small crustaceans, amphipods from the family Gammaridae Leach, 1814. Mosquito grub is widely used in aquarium keeping industry as live feed. Moreover, it is a valuable fishing bait. The most commonly used in feeding aquarium fish are maggots of widespread chironomids *Chironomus plumosus* (Linnaeus, 1758). They are of dark ruby color, reaching the length of 20 mm. Chironomids represent the benthic fauna as they live at the bottom of reservoirs in the muddy substrate and feed on demersal organics. Among gammarus of this region typical are species of *Gammarus aequicauda* (Martinov, 1931) and *Gammarus subtypicus* (Stock, 1966). Gammarus is popular and indispensably used as a feed in fish factories, and is widely used in growing trout, sturgeon, carp and other valuable fish species. In aquarium industry it is used for feeding medium and large fish, as well as a good food that helps cleanse fish's digestive system. It can also be eaten by aquatic turtles.

Taking into account widespread dissemination of biological species within the waters of the Eastern Sivash and considerable market demand for them, the objective of this research is to determine the potential stocks of these aquatic living resources and formulate principles of their sustainable use.

The basis of the research material is macrozoobenthos samples selected on the stations of Eastern Sivash according to the standard hydrobiological methods in 2004 and 2010-2011.

On average during 2010-2011 chironomid's mass ranged from 0.04 to 7.1 g/m² with an average value for the period 1.3 g/m². In terms of total area waters moth stocks on average amounted to 2145 tons. In the 2003-2004 observation average biomass of this species was slightly higher – 1.47 g/m² (or 2425.5 tonnes from all reservoirs) with fluctuations in the range 0,05 – 12 g/m². Gammarus' biomass in 2003-2004 had values lower than in 2010-2011. In average it stood at 4.42 g/m² in 2010-2011, at a value of 4.05 g/m² in 2003-2004. Thus, during the years 2003-2004 and 2010-2011, gammarus' biomass stocks of the entire water area equaled 7,293 tons and 6,683 tons respectively.

It should be noted that nowadays in epy Eastern Sivash there are no official businesses using this resource. However, there are cases of illegal mining and subsequent sale of these species. This situation makes it impossible to control the use of resources and in the future may lead to adverse changes in the benthic communities of the region.

For providing sustainable use of aquatic resources in the investigated area strict compliance with the rules of their extraction and protection is required. Thus, according to the rules of amateur and sports fishing, extraction of mosquito grub is permitted by one hand dredge with a diameter of 70 cm without any mechanical devices, and extraction of gammarus can be done by one fishing net with a diameter of 70 cm. Extraction of mosquito grub and gammarus is free of charge at water areas of general use, at special sites allowed by fish protection bodies for use as a bait for fishing or for aquarium keeping industry needs in the amount not exceeding 0.1 kg for a person per day.

The development of the Sivash's region should undoubtedly be based on the concept of sustainable development. The main idea of this concept is that issues relating to the economic and social development of the region and issues relating to the preservation of high quality environment in this region should be considered together. Regional development plans should take into consideration economic, social and ecological aspects of the development and try to balance all these three components in order to promote the harmonious development of the region. Moreover, it is necessary to ensure protection of the habitat of these species. One of the most effective measures is creation of protected areas and objects. In Sivash region there is Azov-Sivash National Park with the total area of 57,400 ha established in 1993. It is planned to create Sivash national park with the total area of 207,187 ha.

Summarizing it should be noted that the Eastern Sivash is a potentially important water area for aquatic invertebrates. Whereas it is necessary to develop a clear framework of their extraction, processing and sale taking into account applicable legislation of Ukraine and necessity to preserve the benthic communities

of the region. Undoubtedly, the development of the Sivash region should be based on the concept of sustainable development.

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