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INFLUENCE OF THE LEVEL OF WATER EXCHANGE WITH OPEN SEA IN THE WATER AREAS OF COASTAL PROTECTION STRUCTURES OF THE ODESSA BAY (BLACK SEA) ON THE SIZE STRUCTURE OF ISOPOD *IDOTEA BALTHICA*

The nature of the size structure of the population of *Idotea balthica* (Pallas, 1772) was studied within the three water areas of the coastal protection structures of the Odessa Bay of the Black Sea, the first of which was with free water exchange with open sea (flow velocities are 30–35 cm·s⁻¹), the second with limited (10–12 cm·s⁻¹) and the third – with difficulty (3–5 cm·s⁻¹).

It is known that sexual dimorphism in these crustaceans is expressed, including in the size of their body (Khmeleva, 1973). As shown, males of *I. balthica* living in the Odessa Bay of the Black Sea are much larger than females, but smaller by at least 30% of the limit sizes for this species specified in other areas of the Black Sea (Varigin, 2014).

As a result of the conducted researches it was found out that the average length of a body of males of *I. balthica* increased at consecutive transition from water area with a free water exchange (12,4 ± 1,1 mm), limited (13,2 ± 0,6 mm) and difficult (14,2 ± 0,5 mm). The difference between the average body length of crustaceans for water areas with free and difficult water exchange is statistically significant ($p = 0.0149$) at the level of 95%. At the same level, the difference between the average body length of crustaceans living within the waters with limited and difficult water exchange is statistically significant ($p = 0.0336$). The analysis showed that the average body length of *I. balthica* females also increased with a 95% confidence in the transition from the water area with free water exchange (9,1 ± 0,6 mm) to the water area, within which water exchange was difficult (9,7 ± 0,2 mm). The described differences were also found in the analysis of the size-frequency distribution of the studied crustaceans within these three water areas. Thus, in the water area with free water exchange, the body length of most males of *I. balthica* was in the range from 10 to 14 mm. Large males larger than 16 mm are rare. Analysis of the size-frequency distribution of male crustaceans living within the water area with limited water exchange showed a marked shift in their size characteristics towards the largest individuals. Within the water area with difficult water exchange, the predominance of large males becomes obvious.

Females have a different size-frequency distribution within the studied water areas. Here the difference is manifested between individuals of crustaceans living in waters with limited and difficult water exchange. In the semi-enclosed water area with difficult water exchange, the dimensional characteristics of crustacean females are shifted towards larger individuals.

Thus, the semi-enclosed water area with difficult water exchange with open sea is characterized by conditions favorable for the development of *I. balthica*. Within these water areas, reliably protected from the action of large waves, live individuals of these crustaceans of the largest size. It is known that the size of the female *I. balthica* depends on its absolute fertility (Khmeleva, 1973). Therefore, larger females can give more offspring, which will contribute to the prosperity of the population of this species within the coastal zone of the sea.