



### S3.08. Phytoplankton of the Lower Danube in summer – autumn 2014

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In order of monitoring aquatic ecosystems, in the course of an international expedition of the project MIS ETC 1676 «Cross-border interdisciplinary cooperation for the prevention of natural disasters and mitigation of environmental pollution in Lower Danube Euroregion» (Romania, Ukraine, Moldova) in the Lower Danube in June, July and October were carried samplings at the stations Galati, Isaccea, Reni, Izmail, Chilia, Vilkovo. Samples were taken according to standard methods, fixation was made on board, and the processing of samples was done in the coastal laboratories. There were selected and processed 14 samples of phytoplankton.

Totally in the algae cenosis of the Lower Danube there was observed 85 species and varieties of algae belonging to 6 phyla of phytoplankton of Bacillariophyta (54%), Chlorophyta (25%), Cyanobacteria (13%), Chrysophyta (1%), Euglenophyta (6%) and Flagellata (1%). In the summer algae cenosis there were noted 60 species and varieties of algae belonging to the 6 phyla of Bacillariophyta (53%), Chlorophyta (28%), Cyanophyta (12%), Chrysophyta (2%), Euglenophyta (3%) and Flagellata (2%). The greatest number of species was registered for 32 of diatoms and 17 of green algae, less for 7 of blue-green algae, 1 of golden algae, 2 of euglenoids and 1 of flagellates. The greatest number of species was observed in Chilia (31 species), there were recorded the maximum values of Shannon diversity index ( $H=1,061$ ). In summer, the average abundance of phytoplankton was  $451.5 \cdot 10^3 \text{ cells} \cdot \text{L}^{-1}$ , and biomass  $285.4 \text{ mg} \cdot \text{m}^{-3}$ . The maximum abundance for July  $728.02 \cdot 10^3 \text{ cells} \cdot \text{L}^{-1}$  was recorded in the area of Reni, and biomass  $572.43 \text{ mg} \cdot \text{m}^{-3}$  in the area of Izmail. Among dominant species was marked brackish diatom *Skeletonema subsalsum* (Cl.-Eu.) Bethge, subdominants were *Thalassiosira weissflogii* (Grun.) Fryxell et Hasle and *Stephanodiscus hantzschii* Grun.

In the autumn period in the algae cenosis of the Lower Danube there were found 47 species and varieties of algae, that was in 1,28 times less than in the summer period. Microalgae belonged to 5 phyla of phytoplankton of Bacillariophyta (60%), Chlorophyta (21%), Cyanophyta (13%), Chrysophyta (2%) and Euglenophyta (4%). The greatest number of species was registered for diatoms (28 species) and green algae (10 species), a smaller number of species was observed for 6 of blue-green algae, 1 of golden algae and 2 of euglenoids. The greatest abundance of species was noted in the areas of Reni and Vilkovo (19 species), here the maximum values of Shannon diversity index were recorded ( $H=1,098$  and  $H=1,058$  respectively), and in Chilia – 17 species ( $H=1,116$ ). The maximum abundance of  $175,5 \cdot 10^3 \text{ cells} \cdot \text{L}^{-1}$  was recorded in the area of Vilkovo and maximum biomass  $166.5 \text{ mg} \cdot \text{m}^{-3}$  in the area of Chilia. The average abundance of phytoplankton was  $137,4 \cdot 10^3 \text{ cells} \cdot \text{L}^{-1}$ , the average biomass  $93.9 \text{ mg} \cdot \text{m}^{-3}$ . In the autumn, none of the species has reached the maximum values. Among the most common species were marked brackish water and freshwater diatoms *Skeletonema subsalsum*, *Thalassiosira weissflogii*, *Paralia sulcata* (Ehr.) Cl., *Stephanodiscus hantzschii*, *Stephanodiscus astraea* var. *minutula* (Kütz.) Grun., *Guinardia delicatula* (Cl.) Hasle. Thus, in the ecosystem of the Lower Danube, in the summer and in the autumn periods, there was formed diatom-green microalgae complex of freshwater and brackish water genesis. The highest quantitative and qualitative indicators were registered in the summer period.

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