

Srebarna Lake Plankton Primary Production and Factors Influencing Its Seasonal and Annual Variations

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Abstract: The plankton primary productivity of the riparian Srebarna Lake (Lower Danube, river km 391-393) was investigated before and after its reconnection to the river by means of oxygen method (light and dark bottle technique). In the period before the lake water level was significantly lower (11-12 m above sea level) and the gross primary production was higher ($970 \text{ g C m}^{-2} \text{ a}^{-1}$, high hypertrophy) than in the period after (11.5-15 m a.s.l., $360\text{-}430 \text{ g C m}^{-2} \text{ a}^{-1}$, low hypertrophy). In the period after the reconnection the seasonal variations of gross primary production and respiration per m^2 or per m^3 in the layer of maximal photosynthesis had been influenced significantly by the water temperature and transparency measured by Secchi disk, while the annual changes depended on lake water level and nitrate concentration. The nitrogen as a nutrient was limiting the algal growth instead of phosphorus. The achieved trophy decrease is beyond doubt, however, further improvement of the lake ecological status is possible and still highly desirable.

Key words: wetlands, eutrophication, restoration, multivariate analysis