

FLOOD EFFECTS ON THE PHYTOPLANKTON DIVERSITY OF BEGA RIVER (BANAT, ROMANIA)

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ABSTRACT

Situated on the Western Plains of Romania, the Banat region has an adverse natural condition that makes it a frequently-flooded area. A lack of natural drainage due to a low slope, shallow ground water, slow-moving water course densities, and precipitation in this close, mountainous area all contribute to periodic flood events. Water courses in the region have snake-like river beds and swamps present in the area before the XVIIIth century (Griselini, 1979) also create a tendency toward flood activity. The Bega is a river in the Timiș-Bega water system, originating from Poiana Rusca Mountains and the lower basin becomes channeled before entering Timișoara City.

Seasonal floods and overall water quality influence the quantity and quality of phytoplankton and macrozoobenthos in the Bega River. Phytoplankton obtains energy through the process of photosynthesis and must therefore live in the well-lit surface layer of a water body. Crucially dependent on minerals, phytoplankton primarily subsist on macronutrients such as nitrate, phosphate or silicic acid, which are governed by the balance between the so-called biological pump and the upwelling of deep, nutrient-rich waters. After floods the balance of nutrients in a river is changed and the effects can be observed by discerning differences in phytoplankton biomass and families living in the water body before and after the flood event (Muzaffar, 2007).

In this study, based on the information from local water administration, we provide data about the flood in 2005 and its effects on the biodiversity in the river. The measurements were made at 2 sites, one before the Bega River enters Timișoara and the other at Otelec station, 45.5 km downstream from Timișoara.

The runoff in 2005, caused by high precipitation in the upper basin, disturbed the nutrient balance in the river by transporting debris and sediment discharge from upstream, and carrying the local macrozoobenthos out of their normal habitat. Upstream from Timișoara, phytoplankton is dominated by species of diatoms like *Diatoma* sp., *Synedra* sp., *Navicula* sp., *Fragilaria* sp., *Rhoicosphaenia* sp., *Gyrosigma* sp., *Cymatopleura* sp. and *Amphora* sp.

During floods the flow and speed of the water increases, which dilutes the water and modifies the concentration of nutrients and pollutants in the affected area, therefore changing the processes at a biological level. This specific process is important for the possibility of self-purification in water bodies.