

Diatom-based assessment of the ecological status of the Venta River, Kuldīga (LV: Ventas upes ekoloģiskā stāvokļa novērtēšana Kuldīgas pilsētas teritorijā, izmantojot kramaļģes kā bioindikatorus)

Changing land use, climate change, urbanization and population pressures on rivers is an important socio-ecological process that requires managements and biomonitoring. The Venta River at Kuldīga hosts the Ventas Rumba, the widest waterfall in Europe, a popular recreational site for tourists and local residents. The catchment includes residential areas with allotments, industrial areas and agricultural lands. Urbanization and intensive agricultural often have an observable impact on the river ecology, as increased pollution tends to interfere with physiological processes in living organisms, hence, causing pathologies which in turn can further reduce quality and expectancy of life at a societal cost. The monitoring of pollution in Venta is crucial for basing and timing of informed and appropriate municipal-level interventions for prevention and mitigation.

The aim of this study was to assess the ecological status of the River Venta at Kuldīga using diatoms as bioindicators and to determine diatom diversity in the studied part of the river. A total of six sampling sites were selected in a 10 km long stretch of the river in the territory of Kuldīga town. The average distance between sampling sites was 1.5 km.

A total of 112 species were identified in all samples. The highest species diversity of 69 species was observed in sample 2 (individual rarefaction calculated if exactly 500 diatoms valves were counted in all samples. The lowest species diversity was observed in sample 6 (46 species). The most similar in terms of species are samples 1 and 5. This is probably because both sites have similar physical characteristics that include sandy beaches with a slow current.

The most abundant diatoms were *Amphora pediculus* (Kützing) Grunow, *Cocconeis placentula* Ehrenberg, *Amphora lybica* Ehrenberg, *Navicula capitatoradiata* Germain ex Gasse, *Ulnaria ulna* (Nitzsch) Compère and *Sellaphora nigri* (De Notaris) Wetzel & Ector, which are commonly found in meso- to eutrophic waters. Diatom analysis suggests that the Venta might be at risk of eutrophication. This could be reduced by controlling the use of fertilisers on the surrounding agricultural lands. The pollution might also enter in the river from neighbouring allotments. To reduce the risk of pollution, it should be checked whether all allotments with summer houses are connected to the urban sewerage network.

For the most abundant diatom taxa, the susceptibility to pollution was assessed by III (medium), but there were also diatoms with IV and V (very sensitive to pollution). This shows that the Venta River in Kuldīga overall has low levels of pollution. All study sites were rated as good on the IPS index.

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