

MACROPHYTE VEGETATION OF RIVERS IN CROATIA – DIVERSITY AND ECOLOGICAL INDICATION POTENTIAL

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The aim of this study was to gain insight in diversity and distribution of river macrophytes in Croatia, to develop typology of macrophyte vegetation and to apply these data in establishing of macrophyte based index for the ecological quality assessment of rivers.

In the period 2009-2015 almost 500 sampling spots on rivers randomly scattered through all biogeographical regions of Croatia were surveyed. This included almost all Croatian rivers and replicates along the watercourses including repeated sampling on the same locality in three year periods. Abundances of macrophytes (flowering plants, bryophytes and charophytes) were assessed using ordinal scales (extended Braun-Blanquet and Kohler scales). The chemical and physical parameters of water, as well as geomorphology and bank vegetation were also surveyed following standard protocol. Different correlation and ordination procedures were employed to identify main ecological gradients and to define vegetation units. Several general types of macrophyte vegetation were recognized: (i) moss communities (*Platyhypnidium-Fontinalis* type) with two main subtypes depending on water regime; (ii) communities with *Berula erecta* and other herbids with several variants; (iii) communities with submerged and floatant macrophytes (*Scirpus-Sparganium-Nuphar* type), which are the species richest and very often heavily changed in Panonian ecoregion; (iv) communities with narrow leaved submerged macrophytes (*Myriophyllum* type) with special, species rich subtype of cold, fast watercourses of Lika region; (v) communities of broad leaved *Potamogeton* species characteristic for medium sized and large rivers; and (vi) communities with *Callitriche* species restricted to small, slow flowing watercourses with organic or muddy substrate. Each vegetation type was associated with biogeographical regions, river types and water quality. Changes of each vegetation type due to river degradation were described and used for establishing of macrophyte-based index for the ecological quality assessment of rivers.