

Micro-environment measurement along a climatic gradient

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Aquatic macroinvertebrates are heavily influenced by the climatic changes even in temperate, forested habitats. The potential impacts of global climate change may be an increase in water temperatures, changes in seasonal patterns (including intensity) of precipitation and runoff which can alter hydrologic characteristics of aquatic systems. Rapid changes in hydrology caused by extreme heavy rainfalls – especially if there are clearcuts within the catchment area – may cause changes in the hydromorphology, restructure the stream bed or alter the path of the stream itself. All these affect the species composition, that is why the investigated aquatic ecosystems, the streams in forested area have limited ability to adapt to climate change.

In recent study, the samples were taken from three streams which are located in similar, forested areas. The sampling sites were chosen along a climatic gradient. The first sampling site is in Mecsek mountains (South Hungary), the second one is in Kőszeg mountains (West Hungary) and the third one is in Sopron mountains (Northwest Hungary).

The biological samples were taken with a specific cross-section transect arrangement, applying a new, microhabitat-based quadrat sampling method in all selected areas. Parallel with the macroinvertebrate sampling, there were taken hydraulic measures too. The velocity profile, shear velocity, shear stress, drag force and the Reynold's and Froude numbers were estimated to define the near-bed hydraulic conditions, which influence the community structure of aquatic macroinvertebrates.

The main aims of the study were recognize differences along the climatic gradient in a similar habitat types of small streams in forested area if there are any, check up the ability of detection fine differences between similar communities of the new sampling method which focuses on the microhabitat-structure of certain stream sections instead of taking and analyzing composit samples from the whole section. One more additional important aim was to investigate the microhabitat preference of the Habitats Directive Annex II. Dragonfly species, the *Cordulegaster heros* which inhabits each sampling sites.

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