Book of Abstracts

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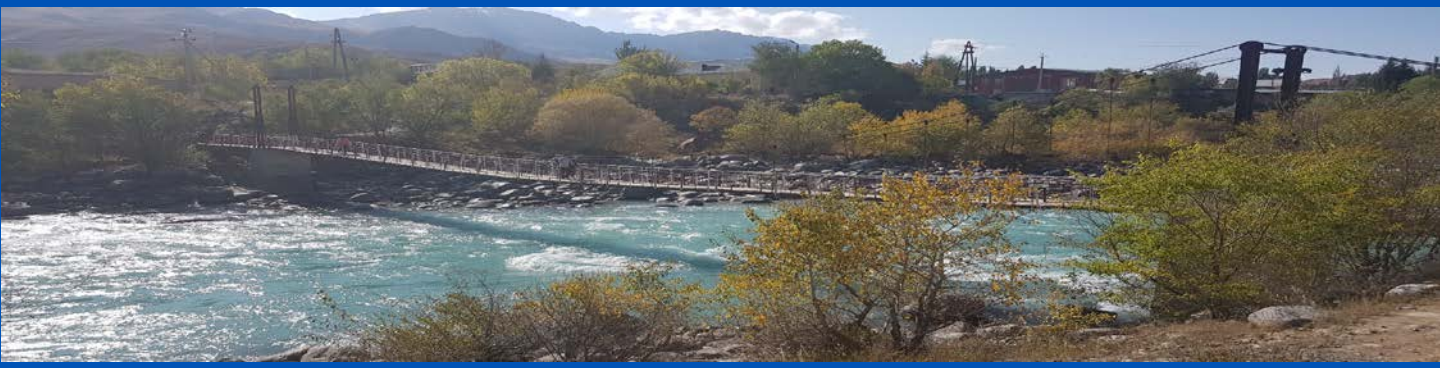

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Stream biofilms in agricultural streams

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Stream biofilms play a vital role on structure and function of agricultural streams. In many lowland streams, macrophyte vegetation is abundant and functions as an important substrate for biofilm (epiphyton) in addition to the gravel and stone substrate for epilithon on the stream bed. We expect that reach-scale habitat conditions in streams (e.g., nutrient availability, hydraulic conditions) affect the epiphyton and epilithon biomass and composition, and that this effect will be substrate-specific (macrophytes and stones). The objectives of our study were (i) to describe concurrent changes in epiphyton and epilithon biomass and composition over a year in agricultural streams, and (ii) to determine the substrate specific reach-scale habitat drivers for the epiphyton and epilithon structure. We monitored epiphyton and epilithon biofilm biomass and composition at three-week intervals and reach-scale environmental conditions daily during a year for two agricultural steams. The results showed that epiphyton and epilithon communities differed in biomass, having high substrate specific biomass in epilithon compared to epiphyton. Epiphyton was mainly composed of diatom and green algae, while cyanobacteria were more important in epilithon, and the diatom species composition varied between the two biofilm types. Epiphyton structural properties were less influenced by reach-scale hydrology and nutrient availability compared to epilithon. Our study shows that control of biofilm structure is substrate specific, indicating that the distribution of substrate in streams will be important to biofilm structural and functional properties on the reach-scale. Knowledge of biofilm control in agricultural streams is important in order to improve management strategies, and future studies should improve the understanding of micro-scale habitat conditions, interactive relationships within biofilms and between the biofilm and the substrates.