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In-stream effectiveness of conveyance channels and material processing channels

Due to the recent interest in stream restoration to help the Chesapeake Bay, this study was undertaken to evaluate the in-stream effectiveness of two restoration practices: conveyance channels and material processing channels. Ten streams, five of each restoration practice, were evaluated in terms of organic retention and macroinvertebrates. The upper and lower reaches of each stream were sampled with transects to measure organic retention percent cover and sampled with two methods for macroinvertebrates. Despite each site being evaluated only once during the summer of 2018, which was the highest rainfall on record in Maryland, trends were still apparent. Material processing channels had significantly higher organic retention compared to conveyance, as they had a larger average hydraulic radius and a greater presence of woody debris. Focusing on macroinvertebrate sampling methods, traditional kick-net sampling compared to novel habitube sampling collected similar species richness. Abundance varied greatly, though habitubes collected higher average abundance compared to traditional sampling. Results from this study suggest that urban stream restoration practices can impact organic retention within streams as well as the ability to provide the best habitat for in-stream biota. When designing streams to reduce downstream impacts, material processing channels should be considered as they retain organic matter and work to provide habitat potential. Due to similar species richness collections across all reaches, habitubes have the potential to be a valid future sampling technique. This, or a similar study, such as one with beavers and Beaver Dam Analogs (BDAs), should be continued over multiple years through different seasons to see if the trends persist or get stronger as the site ages. Stream restoration projects with a more natural approach have the potential to increase the function and durability of streams in the Mid – Atlantic Region, especially if they are further evaluated.