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## RIVERINE DISSOLVED ORGANIC MATTER DECOMPOSITION AND DYNAMICS

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Aquatic and terrestrial ecosystems are intimately linked through the transfer of energy and materials. A common example of ecosystem linkage is the input of terrestrial dissolved organic matter (DOM) to rivers and streams. DOM can play a variety of roles in stream ecosystem function by fueling local food webs, influencing trophic state, and affecting the dissolved nutrient availability. Microorganisms utilize, transform, and produce DOM during microbial metabolism, a relationship that links microbes to DOM quality and quantity. Chemical and physical properties are known to vary with DOM source, and thus the type of terrestrial input may dictate how DOM is processed in a stream. Using laboratory microcosms, and added terrestrial organic matter substrates, we carried out a leaching experiment over forty-five days. We employed a suite of complementary techniques to determine the effect of leaching DOM sources on microorganisms, DOM processing, and ecosystem function. Microbial community composition changed from the original stream water inoculum and depended on DOM source. Cell abundances for all DOM sources spiked after two days, after which abundances dropped and remained relatively steady until the end of the experiment. DOM concentrations decreased exponentially with the maximum amount of carbon utilization taking place within the first five days. The DOM fluorescent signature, initially influenced by amino acid-like fluorescence shifts to more humic-like character over the course of the experiment, indicating DOM humification over time. Our results showcase the advantages of interdisciplinary tools to elucidate the connection of microbial processing, DOM chemistry, and ecosystem function.