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Bacterial utilization of imported organic material in three small humic lakes

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ABSTRACT

Bacterial use of allochthonous organic carbon has been proposed to be of significant importance for food web structures and energy pathways of unproductive lakes. We used a short-term (2 weeks) bioassay approach for measuring bacterial production (BP) and bacterial respiration (BR) on water from the inlets, outlets and epilimnia of three small humic lakes in northern Sweden. While the utilization of organic carbon for BR was similar in the different samples, BP decreased successively from inlet to epilimnion to outlet in all the three lakes. The pattern was the same for summer samples and for autumn samples. We interpret the results as an indication of that allochthonous organic carbon can significantly subsidize both BP and bacterial growth efficiency (BGE) in humic systems, but that the effects fade out with increasing water residence time.