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Turbulent Flow and Periphyton Assemblages in Natural Channels: Improving Descriptions and Linkages

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Understanding the linkages between periphyton and the stream environment is a critical step in improving predictive models of the structure and function of stream ecosystems. Current methods used for evaluating aquatic habitat rely on simplified representations of the flow field in the form of point measurements. These methods can be improved by incorporating important spatial and temporal flow field variations, especially near the stream bed. The research objectives were to rigorously measure the flow fields of natural streams at multiple scales and to investigate the effects of flow on periphyton assemblages. These objectives were met by measurement of periphyton assemblages and associated flow fields in several streams and the laboratory. This research improved understanding of the turbulent flow field in natural streams and the effects of flow on periphyton assemblages.