



## WATER RESOURCES RESEARCH GRANT PROPOSAL

**Project ID:** 2004WA91B

**Title:** Benthic Organisms and Flow Field Interactions: Improving Linkages and Descriptions

**Project Type:** Research

**Focus Categories:** Surface Water, Ecology, Water Use

**Keywords:** aquatic habitat, periphyton, habitat modeling, instream flow methodology, flow measurement

**Start Date:** 03/01/2004

**End Date:** 02/28/2005

**Federal Funds:** \$22,000

**Non-Federal Matching Funds:** \$45,138

**Congressional District:** Washington 5th

**Principal Investigators:**

Rollin Hotchkiss

Mark Charles Stone  
Washington State University

Richard Zack

**Abstract**

Understanding the linkages between benthic organisms and the stream environment is a critical step in improving predictive models of the structure and function of stream ecosystems. Current techniques used for evaluating aquatic habitat rely on simplified representations of the flow field in the form of point measurements. These models can be improved by incorporating important spatial and temporal flow field variations, especially near the stream bed. The objectives of the proposed research are to investigate the effects of flow on periphyton and macro invertebrates at multiple spatial and temporal scales, to rigorously measure the flow fields of natural streams at multiple scales, and to develop software for direct evaluation of aquatic habitat and development of advanced flow metrics. These objectives will be met by measurement of benthic organism assemblages and associated flow fields in several streams. This research will result in an

improved understanding of the effects of flow on benthic organisms and a tool that can evaluate aquatic habitat directly using flow field measurements.