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Using Benthic Macroinvertebrates as a Water Quality Indicator for Clear Creek in Northern Idaho

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Abstract:

Over 600 stream segments in Idaho do not meet desired water quality standards based on beneficial use criteria. Benthic macroinvertebrate analysis has been found to be a rapid and reliable water quality assessment tool across the USA. The objective of this study is to use benthic macroinvertebrates, mainly insects, to determine the water quality of the main fork of Clear Creek in north-central Idaho. Land use in this watershed is approximately: 50% Forestry, 40% Grazing Land, 5% Rural Domestic, 5% Ag/Fish Hatchery. Clear Creek was sampled for benthic macroinvertebrates using a .1m² Hess sampler during the base flow period of the summers of 2007 and 2008. During each sampling year 10 sites were sampled and 4 replications were done at each site for a total of 40 Hess samples each year. In both years the collected samples were processed, sorted, and macroinvertebrates were identified in the laboratory using the identification keys developed by Merritt and Cummings. The compiled data was then statistically analyzed and metrics were calculated to determine Stream Macroinvertebrate Index (SMI) scores for each sampling site and the creek in general. The SMI scores associated with the sites on Clear Creek indicated that adjacent land use had an impact on water quality as significant differences between sampling sites were observed. Physical properties varied between sites in the creek as well including, flow, temperature, substrate, and substrate embeddedness.

Impact Statement:

Physical properties varied between sites in the creek as well including, flow, temperature, substrate, and substrate embeddedness. Outputs are an assessment of water quality conditions in the stream and suggestions for appropriate best management practices to improve stream quality.

Category: Watershed Assessment and Restoration

Type of Presentation: Poster Presentation