

# Baseline Macroinvertebrate Bioassessment of Whychus Creek

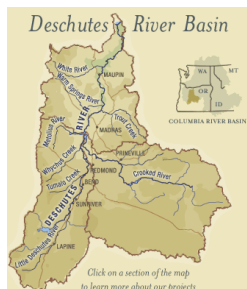
## Abstract

Human land use practices have degraded hundreds of thousands of miles of water corridors in the U.S. Fortunately, there has been an increase in effort to restore many of these aquatic habitats. Currently, the Deschutes Basis Land Trust (DBLT) is proposing to reconnect a portion of Whychus creek that flows through Camp Polk Meadow to its original flood plain in an attempt to restore historic spawning habitat for salmon and steelhead. The purpose of this study was to provide baseline water quality data for the DBLT to aid in assessing the cost/benefit of various restoration approaches as well as monitoring the success of restoration efforts. Macroinvertebrate bioassessment was used to determine biological integrity of Whychus Creek prior to restorative activities. Macroinvertebrates are good indicators of water quality because they live in the stream most of their lives, are easy to collect and identify, and differ in their tolerance to environmental change. Samples were collected within Camp Polk Meadow, upstream (control), and downstream. Invertebrates were characterized using rapid bioassessment protocols. Data analysis indicating baseline water quality is pending.

## Wychus Creek

\*Wychus Creek starts on the eastern slopes of the Cascades flowing northeast through the town of Sisters, Oregon and empties into the Deschutes River.

\*Historically, Wychus creek supported summer steelhead and spring Chinook salmon runs with prime spawning habitat located within Camp Polk Meadow.



\*Channelization of Wychus Creek in Camp Polk Meadow adversely affected spawning habitat.

\*Failed fish passage systems at the Pelton Round Butte Dam project ended anadromous fish runs to Wychus creek in 1968.

\*Portland General Electric and the Confederated Tribes of Warm Springs plan on restoring anadromous fish runs to Wychus creek by 2010.

\*The Deschutes Basin Land Trust acquired Camp Polk Meadow and is working towards restoring critical spawning habitat within the meadow.



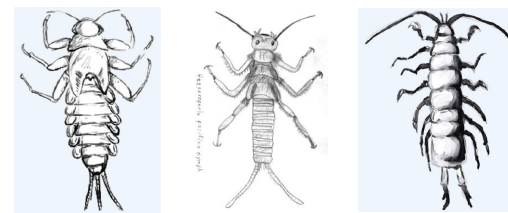
Fig. 1

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Spring Term 2006



## Macroinvertebrate Bioassessment

- Macroinvertebrate bioassessment is a means of evaluating water quality based on surveys of resident species.
- Macroinvertebrate bioassessment is a relatively easy, inexpensive, and reliable method for determining water quality.
- Macroinvertebrates live in the water for the majority of their lives, differ in their tolerance to environmental change, and are easy to collect and identify.
- Macroinvertebrate bioassessment is a technique that can be used by volunteers to gather high quality, usable data.



## Methods

### Site Selection

- Selected a 1,076 foot stream reach according to the Xerces Society's "Guide to Pacific Northwest Macroinvertebrate Monitoring and Identification."
- The reach was representative of the overall condition of the creek

### Benthic Sampling

- Identified 8 riffles to sample from within the reach (see Fig. 1)
- Divided each riffle into a 9 box grid
- Took one sample from each riffle starting with box 1 in riffle 1 using a D-frame kick net
- Composite sampled stored in Nalgene bottles filled with 90% isopropyl alcohol

### Sub-Sampling

- Decanted macroinvertebrate from sediment in the laboratory
- Fabricated a 12.5" x 15" frame with mesh netting
- Divided surface area of frame into 30 even squares
- Spread sample over frame and randomly choose 1 square to use as a sub-sample
- Identified, counted, and recorded first 300 macroinvertebrates

### Analysis

- EPT index
- % of tolerant species richness
- Results pending

Acknowledgements: We would like to thank Jeff Adams, Matt Shindermen, Matt Orr, and Ron Reuter for guidance and technical support for this project. This work was made possible by a grant from T. Montag.