



Water Quality Monitoring in the UCBN

Network Parks Where Water Quality Is Being Monitored

Network parks with wadeable streams and small rivers

- Big Hole National Battlefield
- City of Rocks National Reserve
- John Day Fossil Beds National Monument
- Nez Perce National Historical Park
- Whitman Mission National Historic Site

Importance

Freshwater habitats are diverse and productive ecosystems, providing habitat for aquatic plant, invertebrate, and vertebrate species including many fishes and birds. Rivers and streams are intimately connected to riparian zones, providing habitat for many specialist species. Additionally, most upland animals rely on aquatic habitats to one degree or another.

Water resources in the semi-arid west have been strongly affected by human activity, and all UCBN streams and rivers are listed by states as impaired for one or more parameters. Most UCBN waterbodies and many aquatic resources such as migratory fish, are strongly influenced by activities in the larger watersheds outside park boundaries. Understanding the current status of freshwater ecosystems will help guide management and restoration efforts and provide insight into ecosystem change in a landscape with changing climate and dynamic human influences.

Long Term Monitoring

The major wadeable streams and rivers in the UCBN have been identified for the monitoring of important water quality parameters and macroinvertebrate communities. Water chemistry and macroinvertebrates are typically central components in any water quality monitoring program because of the direct relationship between the two. Temperature is also a key determinant of aquatic community structure, particularly in streams with salmon and trout. Aquatic macroinvertebrate communities have strong effects on freshwater ecosystem processes, represent an important trophic linkage between primary producers and fish, and are important prey for riparian birds and insects. Besides their importance as a biological resource, macroinvertebrate communities reflect water quality and will be used as indicators of ecosystem status and as a first step in identifying any degradation to water quality.

Monitoring Objectives

- What are the long-term trends in key water chemistry and temperature parameters in and adjacent to UCBN park units?
- What is the status and trend in aquatic macroinvertebrate assemblages?
- Do aquatic macroinvertebrate communities sampled within the UCBN indicate polluted or otherwise impaired water quality?



North Fork of the Big Hole River
(Big Hole National Battelfield)



Almo Creek
(City of Rocks National Reserve)

Management Applications

Information gathered from this monitoring will be used to:

- Identify status of UCBN water resources as impaired or pristine.
- Assist in determination of association between water resources and stream restoration efforts.
- Identify long-term trends in water resources in response to human activities within watersheds and regional climate change.
- Improve our understanding of park aquatic health.

Additional Information

An updated resource brief with monitoring data will be available for Big Hole National Battelfield and City of Rocks National Reserve in December 2009. Resource briefs for Nez Perce National Historical Park and Whitman Mission National Historic Site are available on the website listed below.

Contact Information

Eric Starkey, Eric_Starkey@nps.gov