



Aquatic Invertebrate Community Monitoring at Wilson's Creek National Battelfield

Importance: *The canary in the mine and the bugs in the creek*

Scientists commonly monitor aquatic invertebrates, the insect larvae and nymphs, worms, isopods and other invertebrates living in a creek bed, to assess water quality. Many invertebrates reside in the creek bed for a year or more, exposing them to water quality conditions throughout that time. Some species tolerate poor water quality, while other species require pristine conditions. Therefore, the aquatic invertebrate community composition is the “canary in the mine” for overall water quality of a creek. Looking at community composition and assessing habitat will evaluate the overall biological integrity of the creek.



HTLN file photo-mayfly nymph

Long Term Monitoring: *Indices of change*¹

The Heartland Inventory and Monitoring Network scientists collected invertebrate samples on Wilson's Creek and two tributaries, Skegg's Branch and Terrell Creek. The network recently revised their methodology with two objectives in mind: 1) determine the status and trends of invertebrate species diversity, abundance, and community conditions, and 2) relate the invertebrate community to overall water quality through calculations for indicators of water and habitat conditions.

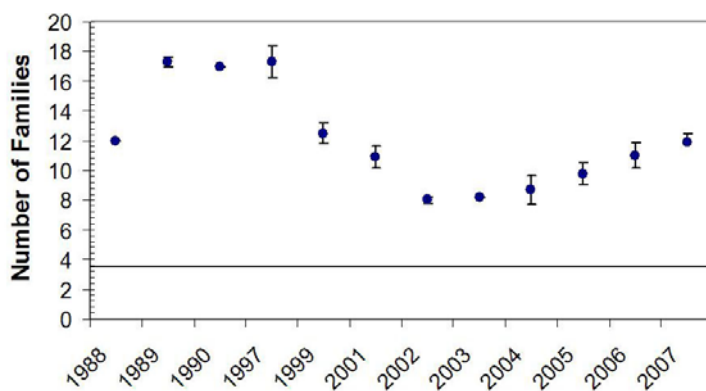
Scientists identified invertebrates in the samples and recorded their numbers. They calculated various indicators of conditions, including the Missouri Stream Condition Index (SCI). And finally, they compared the indicators of conditions across sampling years to address changes over time.

Status and Trends: *Mixed results*

Aquatic invertebrate samples generally contained diversity common to regional creeks. Community composition varied among sampling years and creeks, but was generally within normal ranges. Many factors contribute to these calculations, so attributing variability to real, long-term changes in creek conditions becomes difficult. Still, certain trends could be

discerned from the data. Water quality is impaired in Wilson's Creek, but overall, it is good in Skegg's and Terrell Creeks. Additionally, scientists have found that:

1. Skegg's Creek may have started to show detrimental impacts from urbanization. Degradation of Wilson's and Skegg's Creeks generally originates outside of the park.
2. The long history of aquatic invertebrate monitoring at Wilson's Creek NB provides a sound tool for recognizing deterioration of water quality.



Aquatic invertebrate family richness at Skegg's Branch shows a decline over time, but is not below the trigger point (horizontal line) that would warrant management action.

Heartland Network Inventory and Monitoring
Program of the National Park Service. Visit
www1.nature.nps.gov/im/units/htln/index.htm.

...protecting the habitat
of our heritage

Heartland
Network
Natural Resource Monitoring

¹ Bowles D. E. 2010. Aquatic invertebrate monitoring at Wilson's Creek National Battelfield: 2005-2007 trend report. Natural Resource Technical Report NPS/HTLN/NRTR—2010/287. National Park Service, Fort Collins, Colorado.