



Aquatic Invertebrate Community Monitoring at Effigy Mounds National Monument

Importance: *Canary in the mine and 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 is particularly important in Dousman Creek, because of its reputation as an outstanding trout stream in northeastern Iowa.

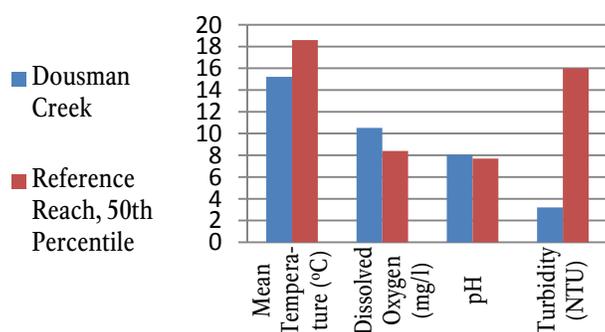


Dousman Creek at Effigy Mounds NM

Long Term Monitoring: *Indices of change*¹

The Heartland Inventory and Monitoring Network scientists collected invertebrate samples in one reach of Dousman Creek of Effigy Mounds NM on July 7, 2008. The network recently had revised their methodology with two objectives in mind: 1) determine the status and trends of invertebrate species diversity, abundance and community conditions 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, to evaluate invertebrate community structure and to assess long-term trends in resource conditions.

Status and Trends: *Relatively undisturbed*



Water quality measurements in Dousman Creek compared to reference sites in Iowa with the graph showing values for the 50th percentile (50% of streams are at or below this value) of reference reaches. Desirable conditions for Dousman Creek include cool water (< 50th percentile), high dissolved oxygen (> 50th percentile), pH near 7 and low turbidity.

Scientists cannot fully characterize community integrity of Dousman Creek from one sampling event. Preliminary results suggest that Dousman Creek remains relatively undisturbed by human activities. Additionally, scientists have found:

1. Measures of community richness lower than expected. The scientists do not know the reason for this finding.
2. That future sampling should include calculation of IOWATER Advanced Benthic Macroinvertebrate Indexing Methods. Using the IOWATER index would allow site managers to compare community structure directly to Iowa reference streams and to assess long-term trends.

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



¹ Bowles D. E., H. R. Dodd, and J. A. Luraas. 2010. Aquatic invertebrate monitoring at Effigy Mounds National Monument, 2008. Natural Resource Data Series NPS/HTLN/NRDS—2010/071. National Park Service, Fort Collins, Colorado.