



Aquatic Invertebrate Community Monitoring at Tallgrass Prairie National Preserve

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

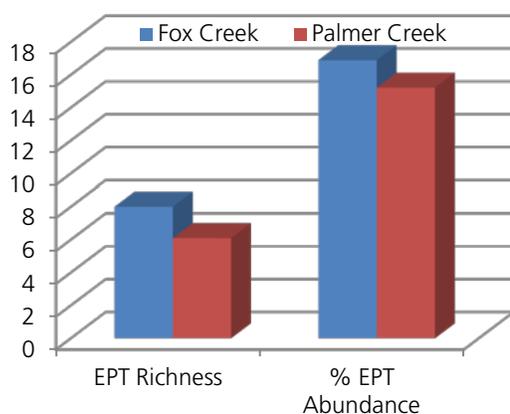
The National Park Service monitors water quality and aquatic invertebrates, the insect larvae and nymphs, worms, and other animals without backbones that live in prairie streams at several Midwestern parks. Monitoring began in Tallgrass Prairie National Preserve in 2009. Trends in invertebrate abundance and diversity, particularly for three insect orders that are intolerant of stream disturbance, can indicate long-term trends in water quality within a stream. Coupling invertebrate community data with measurements of physical characteristics and water quality of the stream tells preserve managers about stream conditions.



Long Term Monitoring: *Using indices to determine conditions*¹

The Heartland Inventory and Monitoring Network monitors aquatic invertebrate communities and water quality measurements in Palmer Creek and Fox Creek. The monitoring objectives are to: (1) determine the status and trends of invertebrate species richness and community composition, and (2) relate invertebrate community status to water quality and habitat conditions. Scientists collected nine stream bottom samples from each stream. They described the physical habitat at sample sites and used a data logger to record water quality measurements. They then calculated indices of community condition that provide insight to biological stream conditions. The EPT (orders of Ephemeroptera, Plecoptera, Trichoptera) Richness and Abundance indices use diversity and abundance of species intolerant of disturbance as an indicator of stream health. Generally the greater the EPT values, the healthier the stream.

Status and Trends: *No final determination of stream health*



Although EPT Richness and % EPT Abundance were low for each stream, no other indicators for either stream suggested impairment. The invertebrate indices presented in this report are generally comparable to those observed for other similar streams in the region. Our preliminary data offer mixed results and are currently insufficient to fully characterize the health of the streams. Additionally, scientists observed:

1. Fox Creek and Palmer Creek both had several intolerant taxa represented in samples.
2. Measurements of water quality collected during this study fell within water quality standards for the state of Kansas. Only the biological indices failed to meet standards for invertebrate community composition.

EPT Richness and Abundance for both streams fell below the threshold indicating a healthy stream (biological supporting, as per US Environmental Protection Agency standards).

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

... protecting the habitat of our heritage



¹Cribbs J. Tyler and D. E. Bowles. 2012. *Aquatic invertebrate monitoring at Tallgrass Prairie National Preserve, 2009 status report. Natural Resource Data Series NPS/HTLN/NRDS—2012/268. National Park Service, Fort Collins, Colorado.*