



Aquatic Invertebrate Community Monitoring at Pea Ridge National Military Park

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

Scientists commonly monitor aquatic invertebrates, insect larvae, nymphs and other invertebrates living in stream beds, to assess stream conditions. Many invertebrates reside in the stream 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 coal mine” for overall stream integrity.



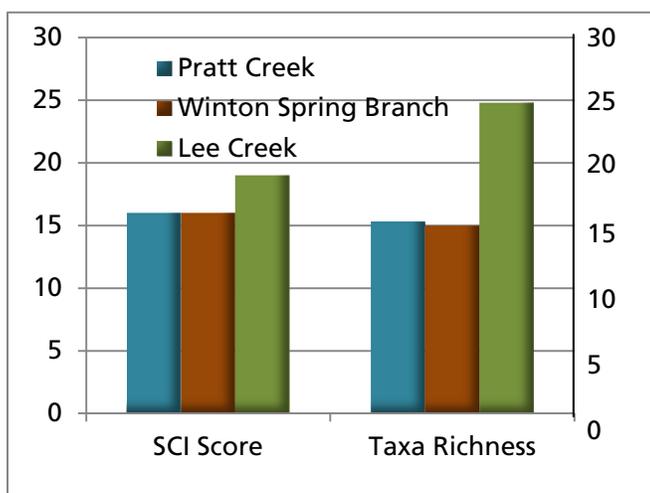
Long Term Monitoring: *Indices of change*¹

The Heartland Inventory and Monitoring Network scientists sampled invertebrate communities in Pratt Creek and Winton Spring Branch for the first time in May 2009, and added Lee Creek to the sampling in May 2010. The Network collected physical habitat information in conjunction with sampling. These data establish a baseline for assessing changes in invertebrate community composition and habitat quality as indicators of overall stream integrity. The biotic integrity of the three streams was assessed using the Missouri Stream Condition Index (SCI). Various measures and indices provide status and trends in stream integrity when changes are examined over multiple years.

Status and Trends: *Successfully Establishing a Baseline*

Continued assessment of long term water quality conditions and aquatic invertebrates will provide park managers with information on potential changes in stream health. Presently, there are insufficient data to fully characterize the integrity of the streams. Establishing status and trends in stream integrity will require several years of data. Prevailing conditions including intermittent flow in Pratt and Lee creeks and thermal constancy and stability in Winton Spring Branch may naturally affect the community structure in those streams. Therefore, care must be taken in the interpretation of data to determine natural conditions as opposed to those caused by human disturbance. Scientists suggested that:

1. Moderate species richness and evenness found in the three streams reflect the dominance of a few disturbance tolerant taxa among samples.
2. The occurrence of rare and environmentally sensitive species, such as Oklahoma salamander (*Eurycea tynerensis*), in all three streams suggests that they are not impaired.



Summary statistics for invertebrate samples at each stream with comparative SCI score categories, not-impaired, impaired, and very impaired.

Heartland Inventory and Monitoring Network of the National Park Service. Visit

www.nps.gov/im/units/hltl/index.htm

... protecting the habitat of our heritage



¹ Hinsey, J. A. and D. E. Bowles. 2012. Aquatic invertebrate monitoring at Pea Ridge National Military Park, 2009-2010. Natural Resource Data Series NPS/HTLN/NRDS—2012/240. National Park Service, Fort Collins, Colorado.