



Aquatic Communities in Springs of Ozark National Scenic Riverways

Importance: *Canary in the coal mine*

Cold water springs have long been associated with pristine Ozark Mountain streams, but rarely have ecologists done aquatic community monitoring of springs in this karst landscape. Here, contaminants from land and surface-water can enter groundwater through bedrock openings, such as fissures and sinkholes. Contaminants can flow through karst groundwater with such rapidity that it is undetected by chemical sampling. Despite the rapid flow, contaminants can adversely affect plants and animals dependent on the water. Therefore, aquatic community composition is the “canary in the coal mine” for overall water quality in the more than 425 springs at Ozark NSR.



Pulltite Spring, Ozark National Scenic Riverways, Missouri. HTLN Photo.

Long Term Monitoring: *Revealing status and trend*¹

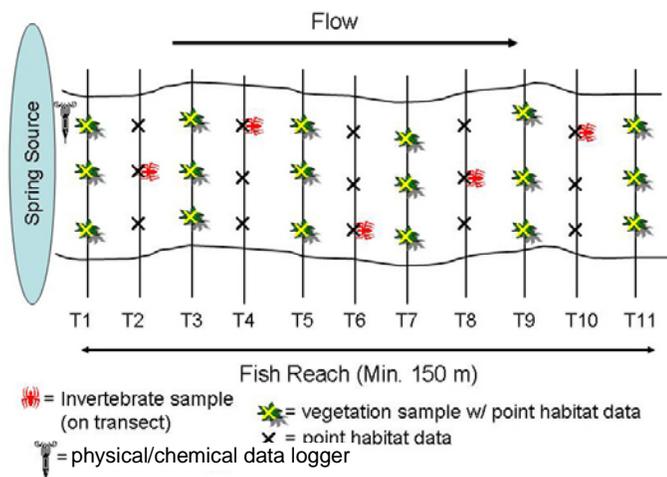
The Heartland Inventory and Monitoring Network began a spring monitoring program in 2007 to provide baseline data for assessing impacts of human and natural disturbances on ecological integrity of springs at Ozark NSR. Monitoring of aquatic communities consisted of measuring and observing vegetation, aquatic invertebrates, fish, habitat and water quality in six large springs from 2007-2009. In time, monitoring should 1) reveal the status and trends of community conditions and 2) relate the community conditions to overall water quality through calculations of biological indices. Looking at community composition and assessing habitat will inform scientists of the overall biological integrity of the spring and spring dependent streams.

Status and Trends: *Time will tell*

All water quality parameters monitored indicate that conditions among the respective springs are good. The findings show the broad natural habitat diversity and the physical and chemical stability in these springs. Additionally, scientists found that:

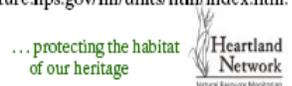
that:

1. Environmentally sensitive invertebrate fauna and fish species dominated all of the springs, indicating good water quality conditions, little siltation and abundant dissolved oxygen.
2. Physical habitat factors including water flow rates, substrate sizes, and distribution and diversity of aquatic vegetation may play a primary role in structuring these aquatic communities.



Transect location and layout within a spring run.

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, J. A. Hinsey, J. T. Cribbs, and J. A. Luraas. 2011. Spring communities monitoring at Ozark National Scenic Riverways, Missouri: 2007-2009 status report. Natural Resource Technical Report NPS/OZAR/NRTR—2011/511. National Park Service, Fort Collins, Colorado.