Spring Creek: Rooney

NE SW NE
Section 35–19N-21E
Cherokee County
Latitude 36.08444
Longitude -95.03444
WBID#: 121600-01-0290N

Blue Thumb Volunteer Monitoring Data Interpretation – February 2012
Written by Gary Wickham

Description of Watershed and Monitoring Site

Spring Creek is an exceptional, spring fed, small river in the rocky hills of northwest Cherokee County. It often is described as being "what the Illinois River once was." Once, it was a notable tributary to a free-flowing Grand River, but now, it flows into Fort Gibson Reservoir. The primary direction of flow is east to west until it turns south to cross Highway 82 shortly before entering the reservoir. For most of its length, the drainage on its north side is fairly natural, without many roads. It is well known as a recreational site for fishing and swimming. The monitoring site is on private land in a fairly broad valley just northeast of Luck Spring and was monitored monthly from 2008-2010.

Stream Condition & Habitat Overview

Spring Creek floods periodically and has a changing, sinuous channel. There is relatively little mining or other soil disturbance in the drainage so siltation is not a major problem. However, its riffles and pools are not so rocky as they might be. The monitoring site has a lot of instream and streamside cover, and the banks are structurally stable. Bank vegetation and the canopy cover are only moderately strong. Spring Creek's habitat score of 94 compares favorably with the Ozark Highlands reference score of 122.4.

Biological Conditions

Fish

The 2009 fish collection taken from the monitoring site is quite similar to the Ozark Highlands Reference collection. Spring Creek has a significant population of intolerant species and a higher number of insectivorous cyprinids (minnows that eat bugs) than does the Reference. There were three less sensitive benthic species found and one less sunfish species found in Spring Creek. This gives Spring Creek a score of 93% when compared to the reference conditions. In terms of numbers, the predominant fish were the Cardinal Shiner and Smallmouth Bass.

Benthic Macroinvertebrates ("bugs")

The winter, 2009 and summer, 2009 data are quite similar and show the Spring Creek site to have as much or more diversity than did the Ozark Highlands Reference. However, in overall comparison, Spring Creek has only about 80% of the Reference. The difference is four less species of sensitive bugs in both collections at Spring Creek.

Bacteria Testing

At a mean 6.4 CFUs/100mL water, E. coli does not appear to be an issue in Spring Creek. That is a bit surprising because the upper part of the drainage has many houses, and the valley through which the stream runs has livestock.

Chemical Testing

Dissolved Oxygen

Spring Creek is well oxygenated. From 3/10/2008 through 2/20/2011, the lowest percent oxygen saturation was 104%. There were nine problematic values over 130% which is the high end of normal. Overall, the oxygen levels tested show that Spring Creek is doing very well.

pH

The measured pH varied from 7.0 to 7.7, well within the normal range.

Soluble Nitrogen

Soluble Nitrogen readings (Nitrate, Nitrite and Ammonia) were mainly below detection, with Nitrate usually detected at a very low 0.5mg/L. Three readings of Soluble Nitrogen were above acceptable levels of 0.8mg/L; 3/10/2008 at 1.68mg/L, 3/28/2010 at 2mg/L and 2/20/2011 at 1mg/L.

Phosphorus

Orthophosphate phosphorous readings were all within the normal range.

Chloride

Chloride averaged 13mg/L over a three year period. This seems high to me for an Ozark Highlands stream and is more in keeping with what one might find in a less rural setting.

Synopsis

Spring Creek is a clear, free flowing, small river marked by a diverse collection of fish and aquatic invertebrate species. It compares favorably with the Ozark Highlands Reference Stream, but nine out-of-range high oxygen saturation readings, three high out-of-range soluble nitrogen readings, and a puzzling, higher than expected mean Chloride might indicate that algal growth is being driven by a nutrient source, either natural or man-made. Certainly, this important upland stream deserves further study.