

Buffalo Creek: Cosby
NE NE NE
Section 8-27N-23W
Harper County
Lat 36.84039
Long -99.69523
WBID# OK 620920-05-0010T

Blue Thumb Volunteer Monitoring Data Interpretation – February 2012
Written by Anita Kauffman

Description of Watershed and Monitoring Site

Harper County is located in the northwestern corner of Oklahoma near the Panhandle. Buffalo is located on U.S. Highway 183/64, twelve miles south of the Kansas state line, thirty miles northeast of the Texas state line, and 174 miles northwest of Oklahoma City. The site where Buffalo Creek was monitored is 3 miles west of the Town of Buffalo, North of Hwy 64. Buffalo Creek flows to the Southeast and feeds the Cimarron River about 12 miles from the testing site. Buffalo Creek has numerous feeder creeks that contribute to the overall health of the stream. This site is located in the Upper Cimarron Watershed. The primary land use in this area is mostly agricultural farming and ranching.

Stream Condition & Habitat Overview

A habitat assessment was conducted on Buffalo Creek on 6/25/2009. Buffalo Creek scored an 88.2 versus the 77.6 for the Central Great Plains ecoregion. The habitat assessment at Buffalo Creek scores better than the average for the high quality reference streams in the Central Great Plains ecoregion. The creek scored high in the following areas: submerged logs and aquatic plants (provide cover for organisms to hide); Pool variability (the varying depths of pools provide for a healthy and diverse community of aquatic organisms consisting of deep and shallow pools); There are few channel alterations or sand bars that form or move in the creek channel; and The banks of the creek appear to be stable and have adequate bank vegetation. Scoring in the medium range were canopy cover and streamside cover. Canopy cover influences the light for growth and survival as well as the overall temperature of the creek, while a diverse streamside cover influences a large part of the energy and food input to the stream. The areas that scored low deal with the natural attributes of the stream and cannot be manipulated. Pool bottom substrate which describes the type of stream bed found in pools. The loose shifting pool bottom will not provide substrate for burrowing organisms and will not allow bottom spawning fish to successfully reproduce. Low flow reflects stream size and this is typical of this part of the state as they don't receive much rainfall. Water is the most basic requirement of aquatic organisms. Overall habitat quality should rise as streams increase in size. The relative straightness of a stream limits the undercutting of banks, root wads and submerged logs which proved cover for fish and organisms. When compared to the average reference conditions for the ecoregion the overall habitat for Buffalo Creek scores really well.

Biological Conditions

Fish

Using the average of high quality reference streams in this ecoregion as the benchmark, Buffalo Creek ranks below average (scores a 75%) with no sensitive benthic (darters, madtoms, sculpins) species present. The majority of the fish that were collected are what we call the tolerant species such as carp, shiners, catfish, mosquitofish, sunfish and bass. One characteristic of these fish is that they are opportunistic and dominate communities that have lost their competitors through loss of habitat or water quality. Twenty-six Sand Shiners, classified as intermediate, were present, as well as ten suckermouth minnows which are classified as intolerant. The minnow population here is really low and this is another factor that has brought down the fish score for Buffalo Creek.

Benthic Macroinvertebrates (bugs)

Collections of macroinvertebrates were taken in both the summer and winter of 2009. Buffalo Creek scored a 70% in the winter and a 57% in the summer. The winter collection lacked the sensitive bug species as well as having a low population of these sensitive bugs. The overall species count however was better in the winter than the ecoregion reference conditions and the population was evenly spread out over these different species. The summer collection did not fare as well. The number of species was lower than the reference conditions, there was still the lack in sensitive bugs and there was lower diversity.

Chemical Condition

There was no chemical data available for this stream at the time of this report.

Synopsis

Buffalo Creek is a pretty typical northwestern creek in Oklahoma, as far as the habitat is concerned. There was not a tree to be found to help keep the creek water shaded and keep the water temperature lower in the summer. The bottom of the creek is pretty mucky and unstable for both the fish and bugs. There is not much flow to this creek as it does not rain much in this part of the state. The habitat scored well for Buffalo Creek but the fish and bugs are telling us otherwise. Without any chemical data we cannot say what the cause is of the low-moderate biological conditions.