

Medicine Creek: Apache (Stayer)
NW SE NW
Section 31-4N-13W
Comanche County
Lat 34 46' 40.1"
Long -98 36' 38.3"
WBID# OK 311300-04-0060G

Blue Thumb Volunteer Monitoring Data Interpretation – February 2009
Written by Carol Stayer

Description of Watershed and Monitoring Site

Medicine Creek is located northwest of Lawton which is in the southwest corner of Oklahoma. Medicine Creek starts life as a small spring by Saddle Mountain in northwest Comanche County in the Central Great Plains Region. It flows southeast through rural areas, mostly private land, and a small corner of the Wichita Mountains Wildlife Refuge northern boundary is cut by the then shallow, sandy stream. The creek continues to flow southeast through one small housing area where volunteers Carol & Dennis Stayer monitor, approximately 20 miles from its origin. Six miles further east-southeast, at a loss of altitude of over 120 feet, it is dammed to form Lake Lawtonka, the states oldest reservoir and Lawton's main water supply. Past that confinement, Medicine Creek is referred to as Medicine Bluff Creek by the locals. It passes through the village of Medicine Park where it is used for recreation, swimming and fishing. The creek then flows under State Highway 49, passes the Manning State Fish Hatchery then onto Ft. Sill, an active Army Artillery base. Through mostly training area it reaches the Registered Landmark uplift referred to as Medicine Bluffs. Flow continues through Ft. Sill passing the Natural Resource offices, a golf course, and housing areas. Medicine Creek flows under Interstate 44 onto the east training area of Ft. Sill and eventually empties into East Cache Creek on Ft. Sill to flow south towards Texas.

Stream Condition & Habitat Overview

The stream habitat is very good with a score of 117.7. Riparian (natural area from the water edge up the bank till it starts to be managed) area vegetation includes grasses, vines, shrubs, and large trees that provide food input, shade the stream, and help bank stability. This bank stability contributes to the creek bottom having little erosion and being more stable for fish reproduction. Instream cover is also good with cobbles and boulders with some root wads of aquatic plants. Medicine Creek has good flow with rocky runs and riffles. The test site is located on a rather straight portion of the creek with the presence of fairly stable sandbars.

Biological Conditions

Fish

Seining from Medicine Creek August 7, 2007 collected a total of 211 fish from 11 different species. Four of the species were sunfish (Green sunfish, Bluegill sunfish, Longear sunfish, and Largemouth bass), whose long-term success is tied to conditions that effect sediment entering and leaving the stream. Tolerant species (those that can tolerate sediment and pollution more then others) numbered 30% of the total population.

No intolerant species were collected. The 7 insectivore species (24% of the total population) collected shows there is good quality and quantity of food base insects. Three species were benthic sensitive species (darters); they indicate past and present habitat and water quality as good. This fish collection is good, scoring a 91%, when compared to the high quality reference creeks in the Central Great Plains ecoregion.

Benthic Macroinvertebrates (bugs)

Benthic macroinvertebrates are bottom of the stream organisms with no backbone that you can see with your eyes. Collections were accomplished 3 times in winter and 3 times in summer from 2003 to 2007. To separate a high quality creek from a moderate quality creek, the comparison of mayflies, stoneflies and caddisflies (EPT Index) is done. Medicine Creek is above the reference for number of EPT species and comparable for EPT abundance, so there is great species diversity and balance in both seasons. The macroinvertebrates in Medicine Creek are excellent when there is water flowing. A couple summers the creek stopped flowing so no macroinvertebrate samples could be collected.

Chemical Condition

Water chemistry was tested 56 times on Medicine Creek between June 2003 and August 2008. Oxygen is not very soluble in water, but that is how aquatic plants and animals get their oxygen. Oxygen saturation fluctuates some due to water temperatures and lack of flowing water during some summer months. Half of the oxygen saturation readings were within the normal range, above 80%. Oxygen saturation fell below 50% (within the poor range) three times. The pH levels of 7.0 to 8.0 are within the parameters suitable for most aquatic life. All organisms for basic life processes require nutrients like nitrogen and phosphorous, although an excessive amount over stimulates growth. Medicine Creek results for three of the soluble nitrogen forms (nitrate, nitrogen, and ammonia) have always been very low or below the detectable levels. Orthophosphate phosphorous has been between 0.007mg/L P and 0.047mg/L P and meets standards (0.037mg/L P) used to identify Oklahoma's Scenic Rivers. Chloride (a dissolved solid) readings on Medicine Creek have been as good or better than the other referenced Central Great Plains creeks.

Bacteria Condition

Bacteria screening was done in the summer months to check for Total Coliform, which includes E. coli. Coliform are indicator organisms of the probability of finding pathogenic organisms in the stream. Testing was done 8 times within 2 years and indications show higher Total Coliform numbers when water was lower flow, but all are within the "safe for bodily contact" as determined by EPA.

Synopsis

Physical habitat + biological community + chemical quality are necessary to understand and define function and health of a stream ecosystem. Medicine Creek provides good homes for plants and animals. Biological collections indicate that the animals and plants living in Medicine Creek are comparable to Wichita Mountains Wildlife refuge and Central Great Plains reference sites. Chemical indications are well within the EPA Clean Water Act requirements. In conclusion, Medicine Creek is a healthy stream with good water quality.