

## Jimmy Creek: Prose

February 10, 2009

SE NE SE  
Section 29-T4N-R13W  
Comanche County  
N 34° 47' 11.04" (34.78640\*)  
W 98° 34' 53.90" (-98.58164\*)  
WBID# OK311300-01-0400C

The following is a report summarizing the data collected and compiled on Jimmy Creek by Blue Thumb Staff and volunteer, Maryruth Prose. Blue Thumb is the water pollution education program of the Oklahoma Conservation Commission. Through Blue Thumb, citizens learn to protect streams, rivers, lakes wetlands, and groundwater through monitoring and educating the public about pollution prevention.

Jimmy Creek is located in Northwest Comanche County, Oklahoma and runs south from a natural spring on the Hilliary Ranch for approximately  $\frac{3}{4}$  of a mile before it joins Medicine Creek on the Rowe Ranch  $\frac{1}{3}$  mile north of the Wichita Mountains Wildlife Refuge. It is supposed that it may also flow from a second spring about  $\frac{1}{2}$  mile further north. During its course from the Hilliary property it flows by five homes/ranches before it joins Medicine Creek, which dumps into Lake Lawtonka. The testing site for Jimmy Creek is on the third property after the spring. There is a small tributary that joins the creek about 500 meters north of the testing site. Jimmy Creek generally runs in a north-to-south direction.

Jimmy Creek has significant cultural and historical importance in the area. The creek is named after Jimmy Quoetone, who with his Kiowa family settled in 1875 on what was then known as Owl Head Creek. This was done in accordance with the Medicine Lodge Treaty of 1867. Much of the property south of the spring still belongs to the Quoetone Family and hundreds of Jimmy's descendants gather at the family campground on the banks of Jimmy Creek for a huge reunion every other year.

Several factors are considered when examining the health of a creek through the Blue Thumb program: habitat, diversity and number of fish, diversity and number of bugs and chemical analysis. Each of these areas will be considered in the following report which is a compilation of assessments, tests and collections conducted between May 2007 and September 2008.

The habitat assessment of Jimmy Creek ranks high (111.2) in comparison to the best quality sites of the Central Great Plains area (77.6). Jimmy Creek scores **high** in canopy cover shading (the shading of the stream section), pool variability (a diversity of deep and shallow pools), streamside cover (a diverse mixture of flora on the banks), bank stability (erosion/sediment going to the stream channel), and in-stream cover (materials such as logs, aquatic plants and cobbles that organisms hide behind, within or under.) All of these areas are optimal on Jimmy Creek.

The Jimmy Creek habitat assessment was **medium** in the areas of flow (stream size), presence of rocky runs and riffles (highly oxygenated, turbulent water, flowing over high quality cover and

substrate), bank vegetation stability (banks stabilized with vegetation benefit the stream more than those stabilized with other materials), and pool bottom substrate (the type of stream bed found in pools).

Channel alteration (the presence of newly formed point bars and islands, few or no signs of alteration are considered optimal) and channel sinuosity (how a channel deviates from a straight line) were scored **low** for Jimmy Creek. However, the overall habitat assessment for Jimmy Creek was outstanding.

The second factor in evaluating the health of a stream is the number and diversity of fish. The labor intensive fish collection, which is done every five years in the Blue Thumb program, was conducted on Jimmy Creek in August of 2007. The collection is done for 400 meters using a seine which is basically a fine net stretched between two poles and run along the creek bed. Jimmy Creek yielded eight (8) different species. The majority of fish species were **tolerant individuals** which are characteristic of a moderate quality streams. This category includes green sunfish (7), blue gill sunfish (17), longear sunfish (13) and largemouth bass (31). The number of sunfish species decreases with the decreasing pool quality and decreasing cover. These four species in Jimmy Creek equate to the best quality sites in the central Great Plains area.

The second largest category was intermediates which included the central stoneroller (62), the sand shiner (1) and the orange throat darter (2). Of particular interest is the darter. It is a **sensitive benthic species** which live with the cobble and gravel, and are very good indicators of the health of the stream's environment. These species do not travel up or down the creek, so their presence relates to the high water quality of Jimmy Creek.

One sand shiner was collected which is an **insectivorous cyprinid**. This category of species type increases as the quality and quantity of the invertebrate food base increases.

The southern redbelly dace represented 13% of the sample, with 20 collected. This is an **intolerant species** which separates high quality from moderate quality sites. Intolerant species will not be present in the moderate quality streams. The finding of this fish was a surprise to the Blue Thumb team. It is only found in Northeastern Oklahoma in the Ozarks **and** Jimmy Creek.

The overall score for fish in Jimmy Creek is 73%, or a high "C", meaning intolerant and sensitive species are rare or intolerant. There may be a few reasons for this: the small fish escaping through the holes of the seine net, and/or (more likely) the complete drying up of Jimmy Creek twice in the last decade.

The bug or macro invertebrate collection for Blue Thumb is done every winter and summer. Samples are collected, labeled, picked and then sent to a professional for identification. The samples are collected from rocky riffles at the site. Jimmy Creek is rich in macro invertebrates and is equal to the total Wichita Mountains area in the number of species and the abundance within a species. Many of these species are sensitive to quality environments. The number

(abundance) and the richness (number of species) of Jimmy Creek are outstanding. Both summer (86%) and winter (130%) collections are in “A” condition and the creek is comparable to the best situation expected with the eco-region. There is a balanced trophic level (chain of consumption) and community structure for the size of Jimmy Creek.

The fourth factor in determining the health of a stream is chemical analysis of the water quality. Several tests are performed monthly on the water collected directly from the stream by the Blue Thumb volunteer. These various tests help to identify nonpoint source pollution of a stream. Nonpoint source pollution is the pollution for which the specific point of origin is not well-defined. Examples are sediment from land clearing activities, fertilizer and pesticide runoff, animal waste runoff, gasoline and oil, and grass clippings. The chemical testing that is done includes dissolved oxygen, pH, nitrate/nitrite, ammonia, orthophosphate, and chloride. The water depth and temperature are also measured. Results of these tests determine the quality of the stream water and detect any pollutants by screening water for potential problems. The scores for Jimmy Creek in all the chemical tests are nothing short of outstanding. Each month between March 2007 and September 2008, tests were either very low or below detection level. Oxygen saturation and pH remained stable throughout the period.

It should be noted that Blue Thumb monitoring does not test for hydrocarbons that may be present in the water. Wind turbines in the Slick Hills that lay above Jimmy Creek’s watershed could be a possible source of hydrocarbon pollution should future testing indicate presence of hydrocarbons.

The last area monitored by Blue Thumb is Escherichia coli. Non-fecal coliforms (bacteria) are widely distributed in nature, being found both as naturally occurring soil organisms, and in the intestines of warm-blooded animals and humans. Fecal coliforms such as E. coli, are coliforms found naturally only in the intestines of warm-blooded animals and humans. The presence of fecal coliforms (E. coli) is therefore the result of some form of fecal contamination from either animal or human. Fecal coliforms serve as an indicator that other pathogenic bacteria could be present. In the summer months (May through September) stream water samples are taken, incubated on a medium and then colonies counted. The majority of the samples in the summers of 2007 and 2008 showed E. coli in the acceptable range. A high reading in June of 2008 could have been from an animal upstream from the testing site.

All of the above information, which is the result of monitoring, helps us to understand and define the function and health of the Jimmy Creek ecosystem. The chemical water quality, plus the physical habitat quality and the biotic quality, all equal a **very healthy** Jimmy Creek. This is good to know as the descendents of Jimmy Quoetone and our grandsons swim in this “awesome” creek!

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