

Using Biology to Measure Environmental Quality in the Tippecanoe River Watershed

Everyone likes clean water. We want our water to be clean so we can swim in it, drink it, and fish in it without worrying about getting sick. We want our lakes to be clear and healthy. But how do we know if the water is clean? We can test the chemicals in it. That's valuable for the few chemicals we can accurately measure. But an even better way to measure water health is to observe what lives in it. Animals that live in the water are surrounded by it every minute of every day. Some kinds of animals can only survive if the water and its habitat are in good condition. Biological monitoring is very useful for keeping track of water health.

The Tippecanoe Watershed Foundation has been measuring the biological health of rivers and lakes in the watershed upstream from Tippecanoe Lake since 2005. Biologists use an electric current to stun fish. The numbers and kinds of fish present tell us a lot about how healthy the water is.



What kinds of fish live in the watershed? Many different kinds. About 50 different species are present.

They range in size from edible largemouth bass like this one:



To 1-inch banded sculpins like this one.

They include sunfish, minnows, suckers, catfish, perch, and many other lesser known groups.

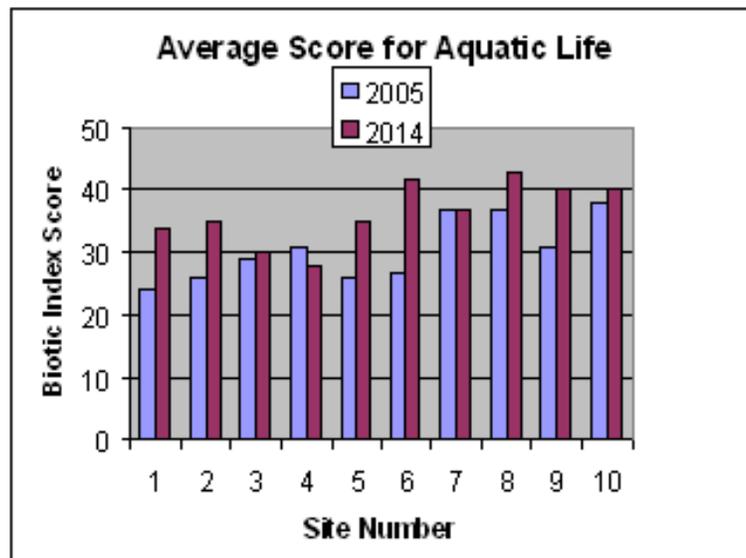
Fish have to eat too. And the food group that most of them eat are smaller animals without backbones that cling to rocks and sticks under water. We call them “macroinvertebrates.” They include insects, snails, worms, and crustaceans. A healthy stream or lake has lots of these in a wide variety, as seen in this picture:



Kids who live in the Tippecanoe watershed have enjoyed the experience of seeing these living things first-hand. Once you've held a fish, you begin to treasure them and work to protect them.



Have we seen any improvement over the years? Yes. Ten sites in the watershed have been monitored since 2005. The graph below shows a summary of changes in the “biotic index scores” of fish and macroinvertebrate communities over this time period. Almost all the sites have improved as the Tippecanoe Watershed Foundation carries out its improvement plan.



How has the Tippecanoe Watershed Foundation helped improve the health of the watershed? We have collaborated with local landowners to restore stream banks and wetlands, install filter strips, fence out livestock, improve storm drains, create rain gardens, and educate all of us who live here how to take care of our land in a way that helps water quality.

Another way we might work together to continue to improve water health in our watershed is to improve “habitat.” Animals need more than clean water to survive. They also need a good place to live, with shelter, shade, and places to escape predators.

Many of the smaller streams in our watershed look like this:



Working together to restore the natural shade, vegetation, and channels in our small streams will help continue the improvements we've seen over the past 10 years.

A more natural small stream in our watershed looks like this:

