Fall 2011

On The Move: Watershed Watch

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Electrofishing Reflects the Health of Local Watersheds

The Ohio EPA conducted water quality assessments of the Yellow Creek and Meander Creek Watersheds as part of a larger Mahoning River Watershed assessment, scheduled for completion in 2013. Field sampling and assessments took place this summer, ahead of schedule, to support the development of Eastgate's Watershed Action Plans for Yellow and Meander Creek.

Multiple sites in the watershed were evaluated through water, sediment and biological sampling. Fish sampling is one biological assessment method which can indicate overall water and habitat quality. Eastgate staff assisted the Ohio EPA with a fish sampling event in the Yellow Creek Watershed and staff from Meander Water assisted with a Meander Reservoir sampling event. (article continued on Page 2)

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During sampling, fish are collected through the use of electrofishing equipment. An electric current, coming from either a handheld pole or electrodes suspended from a boat, momentarily stun and immobilize fish so they can be collected. The collected fish recover in a live well until they can be identified, counted, weighed, examined for abnormalities and then returned to the water. The results of the fish sampling reflect the health of the stream or lake.

Top carnivore species such as smallmouth bass, walleye, grass pickerel, and rock bass indicate a diverse fish community and a healthy ecosystem. As the stream or lake quality declines, these species disappear and are replaced by species more tolerant to degraded conditions, such as the green sunfish.

In addition to fish type and diversity, there are other indicators that can be used to assess the stream or lake. Tumors, fin damage or deformities are common to fish found in polluted waters. Hybrid fish are found where habitat degradation prevents segregation along normal habitat divisions such as substrate types. The presence of non-native species, such as the common carp, is also of interest. Carp are highly tolerant of poor water quality and can become abundant in areas where few other fish species will live.

Official results will not be available for several months; however, some preliminary observations can be made. Meander Reservoir showed a variety of fish species representative of different levels in a healthy ecosystem. Its biological diversity and health can be attributed to limited human access, forested riparian buffers and the overall protection of Meander Reservoir as a drinking water source. It was sampled in July using an electrofishing boat.

Yellow Creek was sampled in September using an in-stream method. In contrast to Meander Reservoir, the site in Yellow Creek showed severely degraded conditions. The site contained heavy sedimentation due to impoundment, lacked natural sinuosity and had obvious contamination from septic discharge. Expectedly, the fish that dominated in Yellow Creek were very tolerant species such as green sunfish and white suckers. Hybrids and non-native species were also found. Only a few high quality fish were identified.

Inland Lake Sampling: Meander Reservoir

On top of stream sampling, the Ohio EPA decides which of Ohio's in land lakes will be surveyed based on whether or not a lake is:

- within a watershed where TMDL field sampling is occurring;
- a public drinking water lake or contains heavy recreation;
- possibly impaired; or
- needs to be assessed for other programmatic needs.

In the Northeast District's region, the Ohio EPA selected the Meander Reservoir for chemical and biological criteria sampling. Sampling took place several times during the summer with Eastgate staff providing assistance. Two sampling locations were determined at which water quality parameters were measured. The following is a sample of those parameters measured throughout the summer:

1. Water Column Profile- A measurement is taken at different depth intervals by an electronic probe that records the dissolved oxygen concentration, pH, specific conductivity, and temperature (degrees Celsius) of the water. Collecting these parameters at different depths provides a picture about lake overturn/stratification, decomposition on the lake bottom, primary productivity, and acidity.

2. Water Transparency- Using a device called a Secchi disk, the turbidity level of the lake is measured. Turbidity indicates an increase in suspended sediment, which in turn prevents light from reaching its aquatic consumer (plants, plankton).

3. Chlorophyll *a*- This plant pigment indicates the nutrient status of a lake and is the primary pigment for photosynthesis.

4. Plankton (Phytoplankton and Zooplankton) - These drifting organisms (animals, bacteria, plants) are nutrient level indicators of a lake and provide food for the lake's fish community.

The Ohio EPA's Ed Wilk prepares to take a water sample while Greg Orr takes a pH reading of Meander Reservoir.

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Ohio EPA's Northeast District Retirees

Throughout the years and through our many associations we have the pleasure of meeting and working with individuals who inspire our work and encourage us to think more critically about our surrounding environment. This can be said about two recent Ohio EPA retirees: Mark Bergman and Keith Riley. Both gentlemen retired this summer from the Northeast District Office and have worked closely with Eastgate's Environmental Programs. Mark Bergman retired from the Division of Surface Water and was a strong advocate of the Yellow Creek Watershed Action Plan as well as for AWARE. Keith Riley retired as the Assistant District Chief of the Ohio EPA's Northeast District Office. Keith played an integral role in the update of Eastgate's 208 Plan as well as the development of EPAC and the Mahoning River Dredging Project. We thank Mark and Keith for their time and commitment to Eastgate's work programs and wish them all the best in the years to come!