Get Buggy about Water Quality with Midges and Mayflies!

Right around this time of year, swarms of midges and mayflies take over Cleveland and surrounding areas. For some, this is the most annoying time of the year, but these bugs are fantastic news for water quality in the region! Midges and mayflies indicate that the water quality of Lake Erie and its tributaries is improving!

Monitoring water quality parameters can become very expensive very quickly. Insect monitoring is a quick and easy way to monitor water quality without conducting chemical analyses. In addition, insect monitoring is far cheaper than chemical analysis. Insect species exhibit varying tolerances to pollution, and thus the insect communities fluctuates relative to water quality. Studying the insect community can provide insight into the short- and long-term effects of pollution as well as the cumulative impact of multiple pollution events. Macroinvertebrates like midges and mayflies have limited mobility and therefore reflect the localized environmental conditions. Environmental degradation like sedimentation, habitat loss, and chemical pollution can threaten these communities, causing the population to leave a waterbody. So maybe those crazy bugs flying all around you are actually a very good thing!

Midge (Credit: Reddit)

Midges pave the way for mayflies to come later in the season. These invertebrates are smaller than mayflies, and there are about 10,000 species of midges worldwide. The pollution tolerance varies depending on the species of midge, but for the most part, midges fall into Group 3 of macroinvertebrates: the pollution tolerant group. These invertebrates can survive in low oxygen environments with a wider pH range and warmer water. Thus, the presence of midges does not necessarily mean the water quality is improving.

In late spring and fall when Lake Erie's water temperature reaches about 60°F, midges hatch over Lake Erie and begin to move inland. This is earlier than the mayflies, which come in late spring and early summer. Midges are not harmful; they do not bite. These small two-winged flies

are roughly the size of a mosquito and serve as excellent prey for frogs, fish, birds, and bats. The midge larvae clean the environment by consuming and recycling organic debris. Overall, midges only live for about two weeks and are only in the adult stage for 3-5 days.

Mayfly (Credit: AL.com)

The presence of midges alone could be an indicator of poor water quality, as midges tolerate high pollutant loads and low oxygen levels, but in the Lake Erie region, we are lucky to have mayflies as well! Unlike midges, mayflies are sensitive to pollution and their presence is an indicator of improving water quality. Mayflies come onto the land to mate, after which the male dies and the female deposits her eggs in the water before dying as well. The eggs hatch into nymphs and burrow into the lake bottom for several years before swimming to the surface, shedding their husk, and flying to shore to mate. 630 species of mayflies currently inhabit North America, surrounding areas with good water quality.

Next time these little buggers get on your nerves, remember that their presence is an ode to our progress in improving the water quality and habitats of the Lake Erie watershed. Healthy insects mean healthy waters!

CLICK HERE TO DOWNLOAD OUR FACT SHEET FOR QUICK FACTS ABOUT MIDGES AND MAYFLIES!