2023 BioMonitoring Report

On behalf of the Alliance of Downriver Watersheds, t**he Huron River Watershed Council and the Wayne County Dept. of Public Services, Water Quality Management Division** conduct benthic macroinvertebrate sampling in the fall and spring of each year. Staff and volunteers visit rivers and creeks across the Downriver region and collect samples of the critters that live in the stream and on the streambed.

"Benthic macroinvertebrates" are another word for stream insects, crustaceans, worms, and mollusks. The word "benthic" refers to the bottom of a lake or stream, the word "macro" means they are large enough to see with the naked eye, and "invertebrates" are creatures without backbones.

Benthic macroinvertebrates are good indicators of water and habitat quality because they live in the water year-round and are exposed to all of the stressors and threats that the stream faces, such as chemical pollution, high and fast water flow, and erosion.

Family Metrics

HRWC and Wayne County use four different metrics of benthic macroinvertebrates to rate the benthic community. The first three of these metrics are calculated by the number of families in a sample. A "family" is a taxonomic term that indicates a type of macroinvertebrate (for example, it is possible to find about 10 different mayfly families in our area of Michigan). In general, the more families found, the healthier the stream.

1. **All insects:** This metric is a count of all insect families in the sample. It serves as a general indicator of stream health and habitat diversity in particular.
2. **EPT:** Standing for Ephemeroptera-Plecoptera-Trichoptera, this metric is a count of all mayfly, stonefly, and caddisfly families in the sample. These insects are sensitive to water temperature and oxygen availability. Stagnant or warm streams will not have many of these families.
3. **Sensitive:** There are 21 insect families found in SE Michigan that are particularly sensitive to organic pollution (i.e. fertilizers, animal and human waste). This metric is a count of those insect families. While up to six or seven of these families might be found in a single sample from very healthy streams in SE Michigan, they are very rare in the ADW.

MiCorps Water Quality Rating (WQR)
The MiCorps WQR is the fourth metric used to determine benthic population quality. This rating is one used by all stream monitoring groups involved in the Michigan Clean Water Corps Program (www.micorps.net), thus it is a statewide measure and used to compare Michigan streams. WQR is an index of biotic integrity (IBI) measure that is essentially a weighted average of insect pollution tolerance values, ranging from 0 to 10. A score of 0 is extremely healthy and a 10 is highly degraded.

The abundance of macroinvertebrates plays into this score as well. It is expected that any particular sample should have between 100-150 macroinvertebrate specimens to give the most accurate score. However, in highly degraded streams collecting this many is not always possible as populations will be low. Samples with very low abundances will essentially break the math of the MiCorps WQR and usually result in a higher score than the stream should have. Thus, if a collection comes back with less than 30 specimens it is automatically given a 10, and a collection with less than 60 specimens is automatically given a 7.

Trends: Trends are determined by simple linear regressions of the sample year vs. the four metrics described above. If at least two of the eight regressions (4 for fall, 4 for spring) are significant at the alpha level of 0.1 and trending the same direction, the trend is noted. Six data points are required before a regression is calculated.

As HRWC and Wayne County have recently taken on the new MiCorps WQR scoring and simultaneously changed several sample sites, most sites do not have enough data yet to show trends and will not for several years.

Cruise the InfoStream

The next several pages of this report give the most recent BioMonitoring results, but HRWC also has an online mapping system where you can see the location of each monitoring site as well as graphs over time for each metric.

Benthic Macroinvertebrate map: https://shorturl.at/drzMQ

All HRWC online maps (not ADW specific): https://www.hrwc.org/our-watershed/maps/

Sampling in 2023

Spring 2023

Site ID	Site Name	# Insect Families	# EPT Families	# Sensitive Families	MiCorps WQR Score and Rating	Trend
CD-1	Frank and Poet: SAHS-West	2	0	0	6.4, Fair	Not enough data
CD-2	Frank and Poet: SAHS-East	5	1	0	6.9, Fairly Poor	Not enough data
CD-3	Brownstown Creek: Woodhaven Community Park	5	0	0	8.0, Poor	Not enough data
CD-7	Frank and Poet: Southland Mall	3	0	0	5.6, Fair	Not enough data
CD-14	Blakely Drain: Racho Rd	3	0	0	6.1, Fair	Not enough data
CD-17	Sutliff-Kenope Drain:Northline Rd	3	0	0	8.5, Poor	Brand new site
EC-6	Ecorse Creek South: Millward Park	2	0	0	5.8, Fair	Not enough data
EC-7	Ecorse Creek North: RA Young Recreation Center	1	0	0	6.7, Fairly Poor	Not enough data
HR-1	Silver Creek: Flat Rock Community Park	4	0	0	6.2, Fair	Not enough data
HR-2	Woods Creek: L Huron Metropark	13	5	2	5.7, Fair	Stable
HR-4	Smith Creek: Flat Rock Community Center	5	0	0	6.1, Fair	Not enough data
HR-9	Port Creek: Armstrong Road	10	1	1	6.1, Fair	Stable

Fall 2023

Site ID	Site Name	# Insect Families	# EPT Families	# Sensitive Families	MiCorps WQR Score and Rating	Trend
CD-1	Frank and Poet: SAHS-West	6	1	0	7, Fairly Poor	Not enough data
CD-2	Frank and Poet: SAHS-East	7	2	0	6.1, Fair	Not enough data

CD-3	Brownstown Creek: Woodhaven Community Park	5	0	0	7.8, Poor	Not enough data
CD-7	Frank and Poet: Southland Mall	10	2	0	6.2, Fair	Not enough data
CD-14	Blakely Drain: Racho Rd	5	2	0	6.4, Fair	Not enough data
EC-6	Ecorse Creek South: Millward Park	2	0	0	7.0, Fairly Poor	Not enough data
EC-7	Ecorse Creek North: RA Young Recreation Center	3	1	0	7.0, Fairly Poor	Not enough data
HR-1	Silver Creek: Flat Rock Community Park	3	1	0	4.5, Good	Not enough data
HR-2	Woods Creek: L Huron Metropark	13	5	0	4.8, Good	Stable
HR-9	Port Creek: Armstrong Rd	6	0	0	5.9, Fair	Stable
HR-10	Huron River: Flat Rock	9	4	1	5.5, Fair	Trending Down