



HRWC BioMonitoring

Fall 2021, Winter 2022, Spring 2022

The Huron River Watershed Council (HRWC) holds two full benthic macroinvertebrate collections (River Roundups) per year, during which volunteers visit rivers and creeks across the watershed and collect a sample of the critters that live in the stream and on the streambed. Furthermore, HRWC also conducts a January Winter Stonefly search, in which we repeat the same procedures as the River Roundup but only collect stoneflies, which are most readily found this time of year because they are still in the nymph stage of their life cycle.

“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.

HRWC uses five different categories of benthic macroinvertebrates to rate the macro population. Four 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 or 5 different stonefly families in our area of Michigan). In general, the more families found, the healthier the stream.

All insects: This metric includes all of the insect families in the sample, and serves as a general indicator of the stream health.

EPT: Standing for Ephemeroptera-Plecoptera-Trichoptera, this metric includes all of the 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.

Sensitive: There are a small handful of insect families in the Huron River watershed that are particularly sensitive to organic pollution. In other words, this metric is calculated from insects that are not likely to be found in streams polluted with fertilizers or animal and human waste.

Winter Stoneflies: The number of stonefly families in January gives more of an indication of overall habitat quality and less of water quality from the landscape. This is because in the winter there is no significant water run-off from land.

MiCorps WQR: The MiCorps Water Quality Ranking is the fifth metric used to determine benthic population quality. This rating is one used by all stream monitoring involved in the state's Michigan Clean Water Corps Program (www.micorps.net). It is a index of biotic integrity (IBI) measure that is essentially a weighted average of insect pollution tolerance values, ranging from 0 to 10. 0 is extremely healthy and a 10 would be highly degraded sample.

Trend: Trends are determined by simple linear regressions of the sample year vs. the five above metrics. If at least two of the nine regressions (4 for fall, 4 for spring, 1 winter stonefly) are significant at the alpha level of 0.1 and trending the same direction, the trend is noted by an up or down arrow. Six data points are required before a regression is calculated.

Current Site condition: To determine the overall condition rating, HRWC uses an integrative model that compares a biomonitoring site to all of HRWC's other biomonitoring sites. This involves insect data, habitat data, water temperature, land cover, and stream size. Streams are ranked as excellent, good, fair, and poor and ordered best to worst. This is done on 59 sites, picked to be representative of all parts of the watershed.

WANT MORE DETAIL?

All inquiries, email Paul at psteen@hrwc.org

Site #	Site Location	Overall Site ranking (1= Best, 59= Worst)	Biological Condition	Habitat/ Physical Condition	River Roundup	All Insects	EPT	Sensitive	MiCorps WQR	Averages since 2018	All Insects	EPT	Sensitive	MiCorps WQR	Winter Stoneflies	Comments	Trend	
25	Huron River: White Lake Road	1	Excellent	Excellent	Fall 21	No sample				Fall Avg.	23.0	12.0	6.0	4.0	Average since 2018	1.0	Despite this being a small little river, the insect diversity is high and we always find many sensitive families. Stoneflies are regularly found. There has still been no significant changes over time (1998-2022).	-
					Spring 22	No sample				Spring Avg.	22.0	13.0	4.0	3.8	Winter 2022	1.3		
30	Mann Creek: Van Amberg Road	2	Excellent	Excellent	Fall 21	No sample				Fall Avg.	18.3	7.3	5.0	4.0	Average since 2018	2.7	Fall samples have increased significantly over time and spring samples have remained steady and high. This site is also the best site to go to during the Stonefly Search as three or four families of stoneflies are regularly found (1995-2022).	-
					Spring 22	No sample				Spring Avg.	14.7	6.7	5.0	3.9	Winter 2022	4.0		
40	South Ore Creek: Hamburg Rd	3	Excellent	Excellent	Fall 21	13	5	2	4.5	Fall Avg.	15.7	6.0	1.7	4.6	Average since 2018	1.5	This creek is doing very well through this section. Spring insects are increasing, though not significantly! Insect and specifically stonefly abundance is very high. (1994-2022).	-
					Spring 22	13	6	1	5	Spring Avg.	12.8	6.2	2.0	4.4	Winter 2022	1.0		

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26	Huron River: Zeeb Road	4	Excellent	Excellent	Fall 21	No sample				Fall Avg.	18.3	8.0	3.0	3.9	Average since 2018	1.8	This section of the Huron River is the most diverse in macroinvertebrate life of any that HRWC monitors. (1996-2021) (It's rating gets downgraded because the river is so big here, and we would hope to see even higher diversity than we do!) This site is hard to sample; it gets quite deep. It has been a number of years since we have successfully gotten a properly sized sample.	-
					Spring 22	Sample rejected for low abundance. Site was flooded.				Spring Avg.	No samples taken in this window due to flooding				Winter 2022	1.0		
37	Portage Creek: Dexter Townhall Road	5	Excellent	Excellent	Fall 21	No sample				Fall Avg.	16.5	8.0	3.0	3.9	Average since 2018	2.0	While fall samples are holding steady and are very diverse, there have been significant declines in the spring total families, EPT families, and sensitive families since 1996 (sensitive families 5-->1 or 2, normally). It is possible that high flows in the spring heavily affect the insect population. Winter stoneflies are found abundantly here. (1996-2022).	↓
					Spring 22	No sample				Spring Avg.	15.0	8.5	2.5	4.7	Winter 2022	1.0		
13	Fleming Creek: Warren Road	6	Excellent	Excellent	Fall 21	10	4	2	3.75	Fall Avg.	10.0	4.0	2.5	4.0	Average since 2018	1.0	Since 1994 this site has improved significantly in fall and spring collections. Winter stoneflies are consistently present (1994-2021).	↑
					Spring 22	No sample				Spring Avg.	15.5	9.5	3.5	4.8	Winter 2022	1.0		

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22	Huron Creek: Dexter-Pinckney Road	7	Excellent	Excellent	Fall 21	10	5	3	3.9	Fall Avg.	13.0	6.5	2.5	3.8	Average since 2018	2.5	While this particular sample was lower than average, the site is showing significant long-term increases in fall EPT samples and spring total families and EPT samples. Stoneflies are abundant and consistently found (1996-2022).	↑
					Spring 22	No sample				Spring Avg.	15.3	8.7	4.0	3.8	Winter 2022	3.0		
16	Honey Creek (N): Darwin Rd	8	Good	Excellent	Fall 21	11	7	3	4	Fall Avg.	17.8	6.8	2.8	4.3	Average since 2018	2.0	This lovely creek has remained unchanging for the years we have been monitoring here. Winter stoneflies are consistently present. (1997-2022).	-
					Spring 22	No sample				Spring Avg.	13.3	7.3	2.0	4.3	Winter 2022	1.0		
84	Fleming Creek: Galpin Road	9	Good	Excellent	Fall 21	No sample				Fall Avg.	16.5	5.0	0.5		Average since 2018	1.7	No significant changes over time. Winter stoneflies are always found here in high numbers (2004-2022).	-
					Spring 22	No sample				Spring Avg.	19.0	8.0	1.0		Winter 2022	1.0		

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79	Mill Creek: Mill Creek Park	10	Good	Good	Fall 21	14	6	2	4.1	Fall Avg.	16.0	8.0	3.3	4.1	Average since 2018	1.8	Samples have been getting better over time. The sensitive families in the spring and fall have increased enough to show a statistically significant change. The other metrics are increasing as well, but not significant yet at this point. Winter stoneflies are always found here. (2003-2022).	↑
					Spring 22	Sample rejected for low diversity. Site was flooded.				Spring Avg.	15.0	8.0	3.0	4.1	Winter 2022	Not sampled		
46	Woodruff Creek: Buno Road	11	Good	Good	Fall 21	No sample				Fall Avg.	12.7	4.3	0.3	5.0	Average since 2018	0.7	No significant changes over time (1993-2022). Winter stoneflies are found less than 50% of the samples here.	-
					Spring 22	No sample				Spring Avg.	13.3	5.7	2.3	5.4	Winter 2022	0.0		
5	Chilson Creek: Chilson Road	12	Good	Good	Fall 21	14	6	1	4.8	Fall Avg.	12.0	4.3	1.0	4.4	Average since 2018	1.0	Sensitive families are declining here, in both the spring and the fall. Winter stoneflies are holding steady (1995-2022).	↓
					Spring 22	11	5	2	4.2	Spring Avg.	12.8	5.8	2.5	4.1	Winter 2022	1.0		

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9	Fleming Creek: Botanical Gardens	13	Good	Good	Fall 21	11	5	2	4.27	Fall Avg.	12.7	5.3	1.3	4.3	Average since 2018	1.3	For the second spring in a row, this site needed to be scratched because collector couldn't get into the water safely and only a few specimens were found. Aside from this, the site is showing significant improvement in both spring and fall, and winter stoneflies have a strong population here. (1993-2022)	↑
					Spring 22	Sample reject for low abundance. Site flooded above banks				Spring Avg.	14.0	8.0	4.0	4.3	Winter 2022	1.0		
62	Huron River: Bell Road	14	Good	Good	Fall 21	No sample				Fall Avg.	15.0	5.5	1.5	4.4	Average since 2018	0.8	This site is often difficult to sample because of fast flows, especially in the spring. Stoneflies are found here in about 3/4 of samples. The site has stable macro populations. (2000-2022)	-
					Spring 22	Sample rejected for low diversity. Site was flooded.				Spring Avg.	12.0	6.0	1.0	4.1	Winter 2022	0.0		
96	Mill Creek: Parker Mill	15	Good	Good	Fall 21	18	3	0	5.1	Fall Avg.	17.5	3.0	0.0	5.9	Average since 2018	0.0	No significant changes over time. Winter stoneflies are never found here (2013-2022).	-
					Spring 22	No sample				Spring Avg.	11.0	6.0	2.0	4.9	Winter 2022	0.0		
49	Davis Creek: Silver Lake Rd	16	Good	Good	Fall 21	18	8	5	4.4	Fall Avg.	15.3	7.0	3.3	4.3	Average since 2018	1.0	All spring metrics are significantly declining, but fall sensitive families are staying about the same statistically. This fall sample was particularly healthy. Stoneflies are always found here (1998-2022).	↓
					Spring 22	13	7	1	5	Spring Avg.	12.3	5.7	1.3	5.4	Winter 2022	1.0		

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63	Hummocky Lick: M-36	17	Good	Fair	Fall 21	12	3	0	4.6	Fall Avg.	13.0	3.3	0.8	4.6	Average since 2018	0.3	From 2000-2004, about 18 insect families were found in fall samples. Since 2007, it is more usual to find between 11-13, and then more recently, 8-10. That being said, the last three samples here have been getting more diverse, implying a recovery. However, there is still a statistically significant decrease. Winter stoneflies are found here but not common. (2000-2022)	↓
					Spring 22	Sample rejected for low diversity. Site was flooded.				Spring Avg.	13.7	6.3	2.0	4.5	Winter 2022	1.0		
67	Pettibone Creek: Commerce Rd	18	Good	Good	Fall 21	No sample				Fall Avg.	11.7	4.0	0.0	4.5	Average since 2018	0.0	There have been no significant changes over time. Winter stoneflies are never found here. (2001-2022)	-
					Spring 22	9.0	5.0	1.0	5.4	Spring Avg.	11.0	5.7	0.3	5.0	Winter 2022	Not sampled		
55	Mill Creek: Manchester Rd	19	Good	Good	Fall 21	11	3	1	4.5	Fall Avg.	11.0	3.0	1.0	4.5	Average since 2018	1.3	There have been no significant changes over time. Winter stoneflies are nearly always found here. (1999-2022).	-
					Spring 22	No sample				Spring Avg.	13.0	6.5	1.5	4.3	Winter 2022	1.0		

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68	Pettibone Creek: Livingston Rd	20	Fair	Fair	Fall 21	No sample				Fall Avg.	8.7	3.0	0.0	4.5	Average since 2018	0.0	Strange results here. There still has been a significant decline in fall total insect families over time but a significant increase in spring total families over time. (2000-2022). Winter stoneflies are not found here.	-
					Spring 22	13.0	6.0	1.0	4.8	Spring Avg.	13.0	5.7	1.0	4.4	Winter 2022	Not sampled		
33	Mill Creek: Jackson Road	21	Fair	Good	Fall 21	No sample				Fall Avg.	14.5	4.5	1.0	4.8	Average since 2018	2.0	Spring total families are significantly increasing; all of the other metrics are stable. The winter stoneflies here are abundant and consistent. (1996-2022)	-
					Spring 22	No sample				Spring Avg.	16.0	6.0	2.0	4.7	Winter 2022	2.0		
61	Huron River: Island Park	22	Fair	Fair	Fall 21	No sample				Fall Avg.	13.5	6.0	2.5	4.1	Average since 2018	2.0	Fall sensitive families are significantly increasing; all of the other metrics are stable. The winter stoneflies here are abundant and consistent. (2001-2022)	-
					Spring 22	10.0	6.0	1.0	5.2	Spring Avg.	10.0	6.0	1.0	5.2	Winter 2022	2.0		
21	Horseshoe Creek: Merrill Road	23	Fair	Fair	Fall 21	16	5	0	5.8	Fall Avg.	15.0	4.7	1.0	4.8	Average since 2018	0.8	We have found a lot more total insect families here since 2009, but all of the other metrics are holding steady. Winter stoneflies were not found in 2022, the first time ever, and we need to be sure to check again in 2023. (2009-2022)	-
					Spring 22	No sample				Spring Avg.	8.5	2.5	0.0	5.1	Winter 2022	0.0		

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14	Woods Creek: L Huron Metropark	24	Fair	Fair	Fall 21	13	3	0	5.1	Fall Avg.	10.7	3.7	0.0	4.5	Average since 2018	1.6	Woods Creek is unchanging, statistically. Several teams have pulled poor samples from here recently though, so HRWC is watching the site carefully to be sure it isn't declining. (1997-2022).	-
					Spring 22	9	3	1	4.8	Spring Avg.	10.5	4.5	1.0	4.8	Winter 2022	1.0		
11	Fleming Creek: Parker Mill County Park	25	Fair	Fair	Fall 21	13	5	2	4	Fall Avg.	13.3	4.3	1.0	4.0	Average since 2018	1.0	Since 2009, we have been finding 1-2 sensitive families here in the fall where there was once none. Starting in 2018, there was enough data to confirm this as statistically significant. Spring sampling has proven to be quite difficult in recent years with flood impeding the collection process. Winter stoneflies are consistently present (1993-2022).	-
					Spring 22	Sample reject for low abundance. Site flooded above banks				Spring Avg.	7.0	4.0	1.0	4.9	Winter 2022	1.0		
80	Mill Creek: Mill Creek Park	26	Fair	Fair	Fall 21	16	6	3	4.2	Fall Avg.	16.0	8.0	3.3	4.2	Average since 2018	1.6	There have been no significant changes over time. Winter stoneflies are nearly always found here, though this past winter was the first time they were not found. (2001-2022)	-
					Spring 22	No sample				Spring Avg.	9.0	6.0	1.0	4.1	Winter 2022	0.0		

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2	Boyden Creek: Delhi	27	Fair	Fair	Fall 21	13	5	1	5.1	Fall Avg.	13.0	5.0	1.0	5.1	Average since 2018	0.5	Individual samples vary a good amount at this site; the overall trend for most of the parameters is stable; fall sensitive families are significantly improving (we regularly find at least 1). This location is one of the best in the watershed for spring caddisflies. Winter stoneflies are found approximately 50% of the time (1994-2022).	-
					Spring 22	No sample				Spring Avg.	10.5	6.0	1.5	4.2	Winter 2022	1.0		
31	Mill Creek: Fletcher Road	28	Fair	Good	Fall 21	17	4	0	5.5	Fall Avg.	15.0	4.0	0.0	5.5	Average since 2018	0.0	Fall families have significantly increased over time (10--> approx 15) Winter stoneflies, however, have disappeared from here since 2015. (1993-2022)	-
					Spring 22	No sample				Spring Avg.	12.0	6.0	3.0	4.9	Winter 2022	0.0		
47	Huron River: Commerce Road	29	Fair	Fair	Fall 21	12	6	1	4.3	Fall Avg.	10.0	5.0	0.5	4.5	Average since 2018	0.0	Fall samples have significantly declined over time, with as many as 18 insect families found in the early years of sampling and only about 5-12 insect families found in recent years. Interestingly, spring EPT has statistically improved! The conflict results in the trend being marked as steady. Winter stoneflies, once abundant, have disappeared since 2019. Certainly this site is one to watch going forward. (1997-2022)	-
					Spring 22	No sample				Spring Avg.	14.0	7.5	1.0	4.9	Winter 2022	0.0		

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15	Hay Creek: M-36	30	Fair	Fair	Fall 21	12	4	2	4.3	Fall Avg.	10.5	3.5	2.0	4.2	Average since 2018	0.8	Several metrics in fall and spring have declined significantly over time. Winter stoneflies have been found consistently until 2020 when they were absent, but have been found again since then. (1996-2022)	↓
					Spring 22	No sample				Spring Avg.	10.5	7.0	2.0	4.3	Winter 2022	1.0		
82	Walker Creek: 8 Mile Creek	31	Fair	Fair	Fall 21	No sample				Fall Avg.	14.0	5.0	1.0	4.5	Average since 2018	0.0	No significant changes over time (2003-2022). Winter stoneflies have never been found here.	-
					Spring 22	No sample				Spring Avg.	11.0	5.0	1.0	4.5	Winter 2022	0.0		
94	Portage Creek: Rockwell Rd	32	Fair	Fair	Fall 21	No sample				Fall Avg.	15.0	3.5	0.5	4.9	Average since 2018	Not sampled	No significant changes over time. Winter stoneflies are never found here (2013-2021).	-
					Spring 22	No sample				Spring Avg.	10.0	3.0	0.0	5.0	Winter 2022	Not sampled		

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6	Davis Creek: Doane Road	33	Fair	Fair	Fall 21	12	5	1	4.3	Fall Avg.	12.0	5.0	1.0	4.3	Average since 2018	2.3	Samplings here are showing slow declines through time, with spring sensitive insects declining significantly. The site is difficult to sample ,especially during spring high flows, and it can be challenging to get good spring samples. Winter stoneflies are very abundant here. This site has been one to keep an eye on for years, but it does not seem to be changing too rapidly. (1994-2022)	-
					Spring 22	No sample				Spring Avg.	12.0	7.0	2.0	4.7	Winter 2022	2.0		
64	Huron River: Proud Lake Rd	34	Fair	Fair	Fall 21	No sample				Fall Avg.	9.5	3.5	0.0	6.0	Average since 2018	0.0	There have been no significant changes over time. Winter stoneflies are never found here. (1999-2022).	-
					Spring 22	No sample				Spring Avg.	12.0	7.5	1.0	4.7	Winter 2022	0.0		
52	South Ore Creek: Bauer Rd	35	Fair	Fair	Fall 21	No sample				Fall Avg.	12.0	4.0	0.0	5.0	Average since 2018	0.0	All three spring metrics have significantly decreased over time. Stoneflies haven't been seen since 2012 (1998-2022).	↓
					Spring 22	13	5	1	5.1	Spring Avg.	10.5	4.0	1.5	5.3	Winter 2022	0.0		

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1	Arms Creek: Walsh Road	36	Fair	Fair	Fall 21	No sample				Fall Avg.	12.5	5.0	1.5	4.5	Average since 2018	1.3	Overall, fall EPT and sensitive families have increased significantly over time; spring total families have declined. Winter stoneflies are holding at strong levels. (1993-2022)	-
					Spring 22	No sample				Spring Avg.	11.5	6.0	1.5	4.4	Winter 2022	2.0		
58	Portage Creek: Unadilla	37	Fair	Fair	Fall 21	No sample				Fall Avg.	11.0	4.0	0.3	4.4	Average since 2018	0.0	There have been no significant changes over time. Winter stoneflies are never found here. (1999-2022)	-
					Spring 22	Sample rejected for low abundance. Site was flooded.				Spring Avg.	11.0	5.5	1.0	4.8	Winter 2022	0.0		
57	Mill Creek: Klinger Road	38	Fair	Fair	Fall 21	13	3	0	6.3	Fall Avg.	13.0	3.0	0.0	6.3	Average since 2018	1.7	Fall EPT families, otherwise this site has mostly stayed stable. Winter stoneflies are regularly found. (1999-2022).	-
					Spring 22	No sample				Spring Avg.	9.0	3.0	0.0	4.2	Winter 2022	2.0		
45	Chilson Creek: Brighton Road	39	Fair	Poor	Fall 21	11	1	0	5.5	Fall Avg.	10.0	2.0	0.0	5.1	Average since 2018	0.0	No significant changes over time (1993-2022). This site is highly mucky. Stoneflies are found here very rarely.	-
					Spring 22	No sample				Spring Avg.	10.5	5.0	0.5	4.4	Winter 2022	0.0		

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7	Davis Creek: Pontiac Road	40	Fair	Fair	Fall 21	10	3	0	5	Fall Avg.	10.5	3.0	1.0	5.0	Average since 2018	1.0	Samples have been slightly declining over many years, but these changes are not yet significant. Winter stoneflies are declining slowly and significantly (1994-2022).	-
					Spring 22	14	6	1	5.3	Spring Avg.	12.0	4.5	1.0	5.1	Winter 2022	0.0		
20	Honey Creek (S): Wagner Road	41	Fair	Fair	Fall 21	10	4	1	4.3	Fall Avg.	9.7	3.3	0.7	4.9	Average since 2018	1.3	The fall sensitive families are significantly declining over time. Most of the other metrics are slightly and non-significantly declining. Stoneflies disappeared from 2015 to 2019 but have been back consistently since 2020. Overall, this site does not seem to be in active decline like it was three years ago (1993-2022).	-
					Spring 22	No sample				Spring Avg.	10.0	4.0	2.7	4.7	Winter 2022	1.0		
91	Portage Creek: Stockbridge	42	Fair	Poor	Fall 21	8	2	0	4.7	Fall Avg.	8.5	2.5	0.0	4.7	Average since 2018	0.0	No significant changes over time. Winter stoneflies are never found here (2013-2021).	-
					Spring 22	No sample				Spring Avg.	10.0	3.5	0.5	5.0	Winter 2022	Not sampled		

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34	Letts Creek: M-52	43	Fair	Fair	Fall 21	14	3	0	5.6	Fall Avg.	13.0	4.0	0.0	5.6	Average since 2018	1.3	This site is declining significantly in fall EPT families. All other metrics are holding steady. Stoneflies are found consistently. (1993-2022)	-
					Spring 22	11	3	0	5.9	Spring Avg.	9.0	3.0	1.0	5.9	Winter 2022	1.0		
32	Mill Creek: Ivey Rd	44	Poor	Poor	Fall 21	13	5	2	5.3	Fall Avg.	13.0	5.0	2.0	5.3	Average since 2018	1.0	There have been no significant changes over time, although spring and fall samples are trending downwards, a result that is not yet significant. Stonefly populations are decreasing as well, also not significantly. This site bears watching. (1993-2022).	-
					Spring 22	15	7	2	4.4	Spring Avg.	14.5	6.5	2.0	3.9	Winter 2022	0.0		
24	Huron River: Cross Street	45	Poor	Poor	Fall 21	No sample				Fall Avg.	12.0	6.0	1.0	4.4	Average since 2018	1.5	No significant changes over time. Winter stoneflies are found here in approximately 50% of samples.	-
					Spring 22	9	3	1	5.5	Spring Avg.	7.0	3.0	0.5	5.8	Winter 2022	Not sampled		

Site #	Site Location	Overall Site ranking (1= Best, 59= Worst)	Biological Condition	Habitat/ Physical Condition	River Roundup	All Insects	EPT	Sensitive	MiCorps WQR	Averages since 2018	All Insects	EPT	Sensitive	MiCorps WQR	Winter Stoneflies	Comments	Trend	
18	Honey Creek (S): Jackson Road	46	Poor	Poor	Fall 21	No sample				Fall Avg.	9.0	2.0	0.0	4.7	Average since 2018	1.0	Sensitive families have declined in spring samples, from approximately 2 in the early 2000s to 0 in recent years. (1993-2018) No sensitive families have been found in fall or spring since 2009. However, winter stoneflies, which disappeared in 2009, made a comeback and have been seen since 2017. This site has seen a lot of changes over time; through crashes and recoveries. Overall, it isn't too much different now than it was in 1993. (1993-2022).	-
					Spring 22	Sample reject for low diversity. Site flooded above banks				Spring Avg.	7.0	3.0	1.0	4.8	Winter 2022	1.0		
42	Traver Creek: Broadway Ave	47	Poor	Poor	Fall 21	No sample				Fall Avg.	10.0	3.5	0.0	6.0	Average since 2018	1.0	No significant changes over time (1993-2022). While degraded, this is one of the healthier urban stream we monitor. Stoneflies can be found here regularly.	-
					Spring 22	No sample				Spring Avg.	6.7	2.7	0.0	6.4	Winter 2022	1.0		

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23	Huron River: Flat Rock	48	Poor	Poor	Fall 21	No sample				Fall Avg.	9.0	5.0	1.5	4.3	Average since 2018	1.3	We recently switched sites at Flat Rock to get a location that had safer access. This was the first spring sample we were able to successfully collect since 2016. Multiple metrics are significantly decreasing; this is a site to watch as we try to confirm if they switch in site makes a difference in the sampling success and amounts we find. Therefore it is not fully accurate to say this location is getting worse; rather it is a situation that needs more time to be properly judged. (1996-2022).	-
					Spring 22	8	4	0	6.2	Spring Avg.	8.0	4.0	0.0	6.2	Winter 2022	Not sampled		
92	Portage Creek: Williamsville Rd	49	Poor	Poor	Fall 21	No sample				Fall Avg.	10.0	3.5	0.0	6.3	Average since 2018	0.0	No significant changes over time. Winter stoneflies are never found here (2013-2021).	-
					Spring 22	No sample				Spring Avg.	7.0	3.0	0.0	5.3	Winter 2022	Not sampled		
60	Port Creek: Armstrong Rd	50	Poor	Poor	Fall 21	No sample				Fall Avg.	6.0	1.5	0.0	6.4	Average since 2018	0.0	This site is consistently poor and unchanged through time. Winter stoneflies are not found here. (1994-2022)	-
					Spring 22	No sample				Spring Avg.	7.5	3.0	2.5	5.1	Winter 2022	0.0		

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8	Greenock Creek: Rushton Rd	51	Poor	Poor	Fall 21	10	2	1	4.8	Fall Avg.	8.0	2.0	0.5	4.8	Average since 2018	0.0	This site has gotten worse over time. All of the spring insect diversity metrics have significantly decreased; fall metrics are falling but not significant. However, even in 1996 when monitoring began, the creek was not a healthy one. The declines we see are from an already low starting point. (1996-2022)	↓
					Spring 22	5	2	0	5.4	Spring Avg.	5.0	2.0	0.0	5.5	Winter 2022	0.0		
50	South Ore Creek: Lake Ridge	52	Fair	Fair	Fall 21	8	2	0	4.5	Fall Avg.	7.5	2.0	0.0	4.8	Average since 2018	0.0	This site has declined over time, but these changes are not yet significant. This site has nice habitat, but poor bugs due to poor water quality. Stoneflies are never found here. (1998-2022)	-
					Spring 22	5	2	0	4.6	Spring Avg.	4.5	1.5	0.0	4.7	Winter 2022	0.0		
27	Malletts Creek: Chalmers Road	53	Poor	Poor	Fall 21	No sample				Fall Avg.	8.7	2.7	0.0	4.9	Average since 2018	0.0	Long term, spring and fall samples have shown improvement over time (1994-2021).	↑
					Spring 22	Sample rejected for low abundance. Site was flooded.				Spring Avg.	7.3	2.0	0.0	5.1	Winter 2022	0.0		
99	Horseshoe Creek: Brookside Rd	54	Poor	Poor	Fall 21	13	1	1	5.4	Fall Avg.	13	1	1	5.4	Average since 2018	0.0	No significant changes over time. Winter stoneflies are never found here (2012-2022).	-
					Spring 22	No sample				Spring Avg.	4.0	0.5	0.5	5.5	Winter 2022	0.0		

Site #	Site Location	Overall Site ranking (1= Best, 59= Worst)	Biological Condition	Habitat/ Physical Condition	River Roundup	All Insects	EPT	Sensitive	MiCorps WQR	Averages since 2018	All Insects	EPT	Sensitive	MiCorps WQR	Winter Stoneflies	Comments	Trend	
98	Horseshoe Creek: Barker Road	55	Poor	Poor	Fall 21	No sample				Fall Avg.	8.5	0.5	0.0	5.6	Average since 2018	0.0	No significant changes over time. Winter stoneflies are never found here (2012-2022).	-
					Spring 22	No sample				Spring Avg.	4.0	1.0	0.0	5.4	Winter 2022	0.0		
97	Norton Creek: Gibson Park	56	Poor	Poor	Fall 21	No sample				Fall Avg.	6.5	0.5	0.0	5.4	Average since 2018	0.0	No significant changes over time. Winter stoneflies are never found here (2013-2022).	-
					Spring 22	No sample				Spring Avg.	5.0	0.0	0.0	5.5	Winter 2022	0.0		
41	Swift Run: Shetland Drive	57	Poor	Poor	Fall 21	No sample				Fall Avg.	7.0	1.0	0.0	5.5	Average since 2018	0.0	No significant changes over time. This site is highly degrade; stoneflies have never been found here (1993-2022).	-
					Spring 22	4	1	0	4.6	Spring Avg.	3.3	0.7	0.0	5.3	Winter 2022	0.0		
35	Millers Creek: Glazier Way	58	Poor	Poor	Fall 21	9	1	0	5.2	Fall Avg.	9.0	1.0	0.0	5.9	Average since 2018	0.0	No significant changes over time. This site is highly degrade; stoneflies have never been found here (1993-2022).	-
					Spring 22	No sample				Spring Avg.	7.0	1.0	0.0	6.1	Winter 2022	0.0		
65	Norton Creek: Maple Road	59	Poor	Poor	Fall 21	1	0	0	7.3	Fall Avg.	1.0	0.0	0.0	7.3	Average since 2018	0.0	This site shows significant decline in fall EPT metrics and total insects families . The last several years have had particularly poor counts. There are a mess of scuds here and barely anything else. Winter stoneflies are never found	↓
					Spring 22	No sample				Spring Avg.	6.0	1.0	0.0	6.5	Winter 2022	Not sampled		