

# Volunteer Stream Monitoring Program Report 2006

## *Tip of the Mitt Watershed Council*

### Program Description:

Thousands of miles of scenic streams spread across and characterize the landscape of Northern Michigan. These streams are the circulatory system of our water paradise. They are conduits between surface water features, transporting vast quantities of clean, healthy water that sustain our magnificent lakes. Among these are some of the State's premier trout streams, including the Pigeon, Sturgeon, Boyne and Jordan Rivers. People travel from far and wide to recreate in these streams and experience their intense beauty first-hand.

Recognizing the ecological and economic value of the region's streams, the Watershed Council embarked on a new voyage in 2005, adding a Volunteer Stream Monitoring Program to its repertoire of water quality monitoring programs. Volunteers monitor stream water quality two times per year, in the spring and fall. To date, water quality information has been collected at 17 sites on eight streams, which include: Kimberly and Mullett Creeks flowing into Mullett Lake; the Boyne River, Stover and Horton Creeks flowing into Lake Charlevoix; Eastport and Spencer Creeks, tributaries of Torch Lake; and the Bear River.



Since 2005, over 50 enthusiastic volunteers have ventured into the streams to collect water quality data. The Watershed Council first provides an in-depth training to teach monitoring methodologies to the volunteers. Then, volunteers head into the field in teams of 3-6 people to perform what is called "biological monitoring". They collect aquatic macroinvertebrates, such as aquatic insects, crustaceans, snails, and leeches, in order to determine the biological health of the stream.

A few weeks after field data collection, an indoor identification session is held at North Central Michigan College in Petoskey. During the indoor session, our committed volunteers sort their collections before sitting down with volunteer 'experts' who are well-versed in taxonomic identification of aquatic macroinvertebrates. The specimens are identified to the family level, tallied and then, put in airtight containers filled with ethanol for long-term storage.



The invaluable data collected by volunteers are used to determine biological diversity and thereby, gauge the biological health of a stream. After inputting all data into a database, biological diversity is determined based upon the total number of macroinvertebrate families and the number of families sensitive to pollution found at each site. Essentially, the greater the number of families found at a site, the greater the diversity and therefore, the healthier the stream. There is strength in diversity!

### Results:

Data collected so far in the Volunteer Stream Monitoring program show that the majority of the streams have very diverse macroinvertebrate populations, including a number of sensitive species. To date, an impressive total of 89 different macroinvertebrate families have been found among all sites and as many as 26 total and 9 sensitive families found at a single site!

The total number of families provides a rough comparison of total diversity, but the EPT and sensitive families indices are particularly useful for discerning water quality differences. For example, during May, 2005 the two sites sampled on Horton Creek appeared to have similar water quality as both had

the same number of families. However, the downstream site had more EPT families and many more sensitive families, which means that it had higher water quality. Data from Mullett Creek in September of 2005 provides another good example; when the Crump Road site had a lower number of total taxa than M27, but a higher number of EPT and sensitive families. During subsequent sampling events, the Crump Road site consistently had higher numbers in all three indices, essentially indicating that the lower number of total taxa in the first sample period was an anomaly.

Table 1: Results from Volunteer Stream Monitoring program.

Stream Name	Site Location	Total Taxa 9-2005	Total Taxa 5-2006	Total Taxa 9-2006	Total Taxa Avg.	EPT Taxa 9-2005	EPT Taxa 5-2006	EPT Taxa 9-2006	EPT Taxa Avg.	Sens. Taxa 9-2005	Sens. Taxa 5-2006	Sens. Taxa 9-2006	Sens. Taxa Avg.
Bear River	Bear River Rd	ND	25	26	25.5	ND	11	9	10.0	ND	5	4	4.5
Bear River	Mineral Well Prk	ND	19	13	16.0	ND	7	6	6.5	ND	4	2	3.0
Boyne River	Dobleski Rd	15	19	14	16.0	10	11	9	10.0	5	7	4	5.3
Boyne River	City Park	19	20	10	16.3	11	12	8	10.3	5	6	4	5.0
Eastport Creek	Farrell Rd	23	25	ND	24.0	8	10	ND	9.0	3	5	ND	4.0
Eastport Creek	Eastport Market	19	22	ND	20.5	4	7	ND	5.5	1	2	ND	1.5
Horton Creek	Church Rd	15	18	13	15.3	5	5	5	5.0	0	1	0	0.3
Horton Creek	Boyne City Rd	18	18	25	20.3	9	11	12	10.7	6	9	7	7.3
Kimberly Creek	Montgomery Rd	20	18	19	19.0	7	9	8	8.0	3	4	3	3.3
Kimberly Creek	Quarry Rd	18	24	23	21.7	7	9	8	8.0	3	5	4	4.0
Mullett Creek	Crump Rd	17	21	25	21.0	13	11	12	12.0	7	5	5	5.7
Mullett Creek	M27	21	14	20	18.3	7	3	5	5.0	0	0	0	0.0
Spencer Creek	McPherson Rd	4	20	22	15.3	1	9	8	6.0	0	7	4	3.7
Spencer Creek	Coy St.	10	21	19	16.7	4	9	8	7.0	2	5	6	4.3
Stover Creek	Ferry Rd	16	11	15	14.0	3	4	3	3.3	0	2	0	0.7
Stover Creek	City Cemetery	18	18	17	17.7	6	8	6	6.7	3	3	3	3.0
Stover Creek	Irish Boat Shop	14	15	15	14.7	1	3	2	2.0	0	0	0	0.0

\*Total taxa = total number of macroinvertebrate families; EPT = number of families belonging to mostly sensitive insect orders: Ephemeroptera, Plecoptera, Trichoptera; Sens Taxa = number of sensitive macroinvertebrate families, based on the Hilsenhoff biotic index; Avg. = average; ND = no data.

Watershed Council staff have already put the data to use, informing one community of a sudden drop in diversity that coincided with construction activities on a nearby stream bank. We will continue to use the information gathered by volunteers to ascertain stream health, expose specific water quality issues, and look at trends over time. Furthermore, data from this program will be used by Michigan DEQ to identify sites that need further assessment and as supplemental data for statewide water resource management.



### Get involved:

If you enjoy being outdoors and would like to explore the fascinating stream ecosystems of Northern Michigan, please consider becoming involved in the Tip of the Mitt Volunteer Stream Monitoring Program. Volunteer commitment is approximately two days a year (four half-days) and no experience is required. For further information or to volunteer for this project, please contact Kevin Cronk, Monitoring and Research Coordinator, at 231-347-1181, extension 109 or [kevin@watershedcouncil.org](mailto:kevin@watershedcouncil.org).