

Overall Condition: **Good**

At this site there are several kinds of bugs and a few of them are sensitive. The water is clean and cool. The stream banks and streamside vegetation are exceptional here, because of the surrounding Botanical Gardens. However, there is one tall bank eroding where the stream turns sharply against the walking trail. Overall the stream is of good quality and it supports a variety of aquatic life.

Measuring Stream Quality

We use the bugs living in the creek to measure stream quality for two reasons. When the stream is rich in habitat variety it will have many diverse kinds of bugs (called families). Also, some bugs (called sensitive) can live only in good quality streams; they die in a poor quality stream. Any stream with sensitive families has the clean water and good habitat required by those bugs to survive.

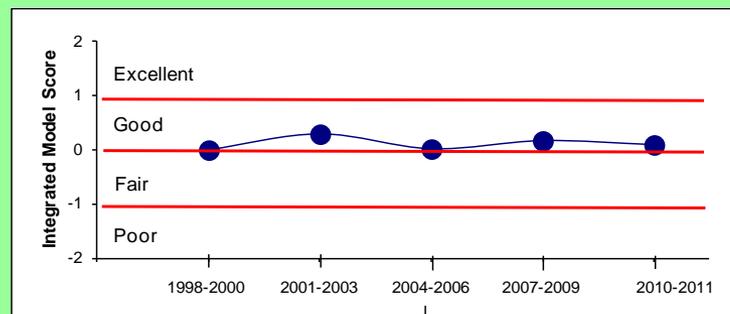
Monitoring Data

These data come from HRWC volunteers who have monitored this site 34 times, starting in 1993. This includes Stonefly Search, River Roundup, Habitat, and Temperature events.

This site on Fleming Creek is 18 feet wide and shallow (less than a foot), with an occasional 1.5-foot deep pool. In 2009 we found good habitat, a sturdy bottom, and stable banks but the rocks in the riffles were somewhat clogged with silt. It has clean, cool water (seldom over 70°F) but the watershed is starting to be developed, with 10% Impervious surface, so that urban runoff may be impacting stream quality. (See "How is the Creek affected by land use here".)

We typically find an average of 12 or 13 different insect families here including a couple of sensitive families. These numbers are pretty average for a healthy creek in the Huron River system.

In the winter we do find both kinds of stoneflies that grow only in winter and are dormant the rest of the year. Stoneflies are highly sensitive to organic pollution.



To determine the overall condition rating, HRWC uses an integrative model that compares this site to all of HRWC's other monitoring sites in the Huron watershed. The model uses insect, habitat, temperature, and stream size data.

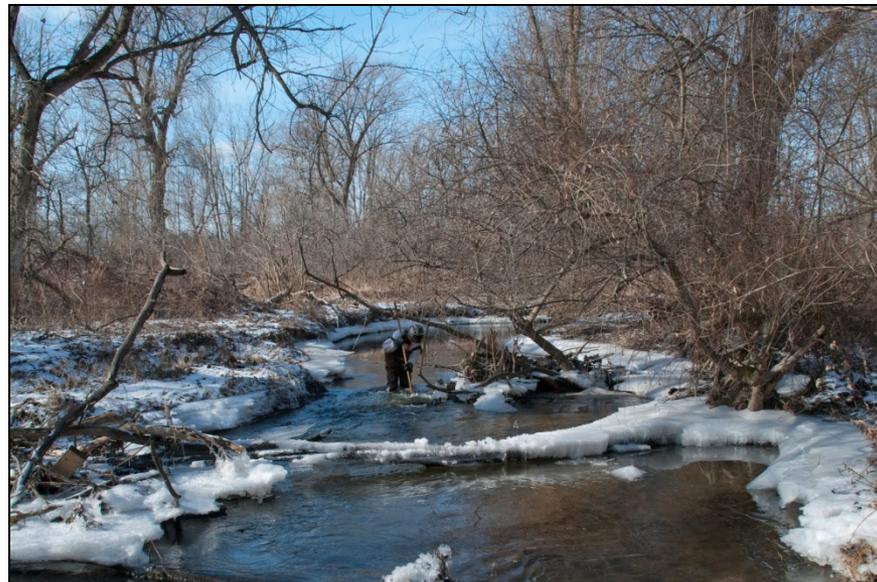


Photo credit: John Lloyd

Fleming Creek at the Bot Gardens

Background Information

Site History

Fleming Creek flows through the University of Michigan's Matthaei Botanical Gardens featuring 350 acres of diverse plant life with wetlands, and an indoor conservancy.

Fleming Creek is a clear, cool, and powerful stream. It was an important source of power for the first European settlement in this area. In 1824, Mr. Fleming built one of the first mills on the Huron River system. It was located on Fleming Creek very close to the current Botanical Gardens.

This site is home to the locally endangered redbreasted dace, following a successful translocation by fishery scientists. A dace is a type of minnow and this species is marked by broad red striped coloring on its sides.

How is the Creek affected by land use here?

The area of land draining to this site is small, receiving water from only 18 square miles of land, mostly farms. This is a very rural area in the Huron watershed, according to data from 2000. Only 13% of the Arms Creek watershed is developed while nearly half is used for agriculture. Only 5% of the land is covered by impervious surface.

Impervious surface is hard on streams because it prevents rain from being filtered and cleaned through the soil and, instead, delivers it quickly to the stream, carrying pollutants and causing surging flows that damage the stream habitat and biotic community.

Creeks tend to start degrading once the watershed is more than 8% impervious and become badly degraded by 25%. [The most urbanized Huron River watershed that we study (draining into Millers Creek at Baxter Road) is 51% impervious.]

Watershed land use in 2000: 47% Agriculture, 13% Urban, 14% Forest, 9% Open, 17% Wetland.

What You Can Do

Help us improve Fleming Creek! Plant trees and deep-rooted plants in low areas on your property to help the rain infiltrate into the earth so it can be cleansed and cooled. Go to www.hrwc.org/take-action for ways to keep the rain at home so that it doesn't wash pollutants into the stream and cause flooding from the sudden increase in flow volume.



- Insects found in at least two sampling events from 2009-2011:**
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| * Athericidae — watersnipe fly | Heptageniidae — flathead mayfly |
| *Capniidae — slender winter stonefly | Hydropsychidae — common net-spinner caddisfly |
| *Taeniopterygidae — broad-back stonefly | Limnephilidae — northern caddisfly |
| Aeshnidae — darners dragonfly | Nepidae — water scorpions |
| Baetidae — small minnow mayfly | Philopotamidae — finger-net caddisfly |
| Calopterygidae — broad-winged damselfly | Simuliidae — black fly |
| Chironomidae — midge | Tipulidae — crane fly |
| Coenagrionidae — narrow-winged damselfly | Uenoidae — Uenoid caddisfly |
| Elmidae — riffle beetle | Veliidae — short-legged striders |
| Gerridae — water strider | |
- *Sensitive Family*