The Huron River Watershed Council Winter-Spring 2003

Monitoring Gazette

study results of the

Adopt-A-Stream Program

Communities and individuals protecting our water together since 1965.

Another Way the RoundUp Helps the River

The ecological quality of the Huron River is threatened, and many parts of the river are in poor shape. Whereas in the past factory and sewage effluents were the major sources of river deterioration, today the primary causes are development and the pollution that comes from many small and individual sources, called non-point pollution. All of us contribute to this non-point pollution through our everyday activities, such as lawn maintenance and trash disposal. Non-point pollution is not readily controlled by high-tech fixes or sweeping governmental actions. It can only be reduced when individuals become aware of the impact of their actions and then change their behaviors to reduce their adverse effects. One of the goals of the River Roundup is to bring about such awareness and to encourage such behavioral changes.

What people are doing

Below are a few of the of changes made by people following their first RoundUp one year ago.

- One person has removed a portion of the lawn in the backyard and planted it with decorative plants. Also, she no longer washes the car on her driveway.
- Another person has spoken about rezoning in a township meeting
- Several people have told other people what they have learned; others have taught people about creatures in the creek.
- A teacher said that his knowledge and involvement in watershed issues had increased both at home and in his teaching as a result of his participation. His participation has been very helpful to change direction in his career and find meaningful involvement in his work.

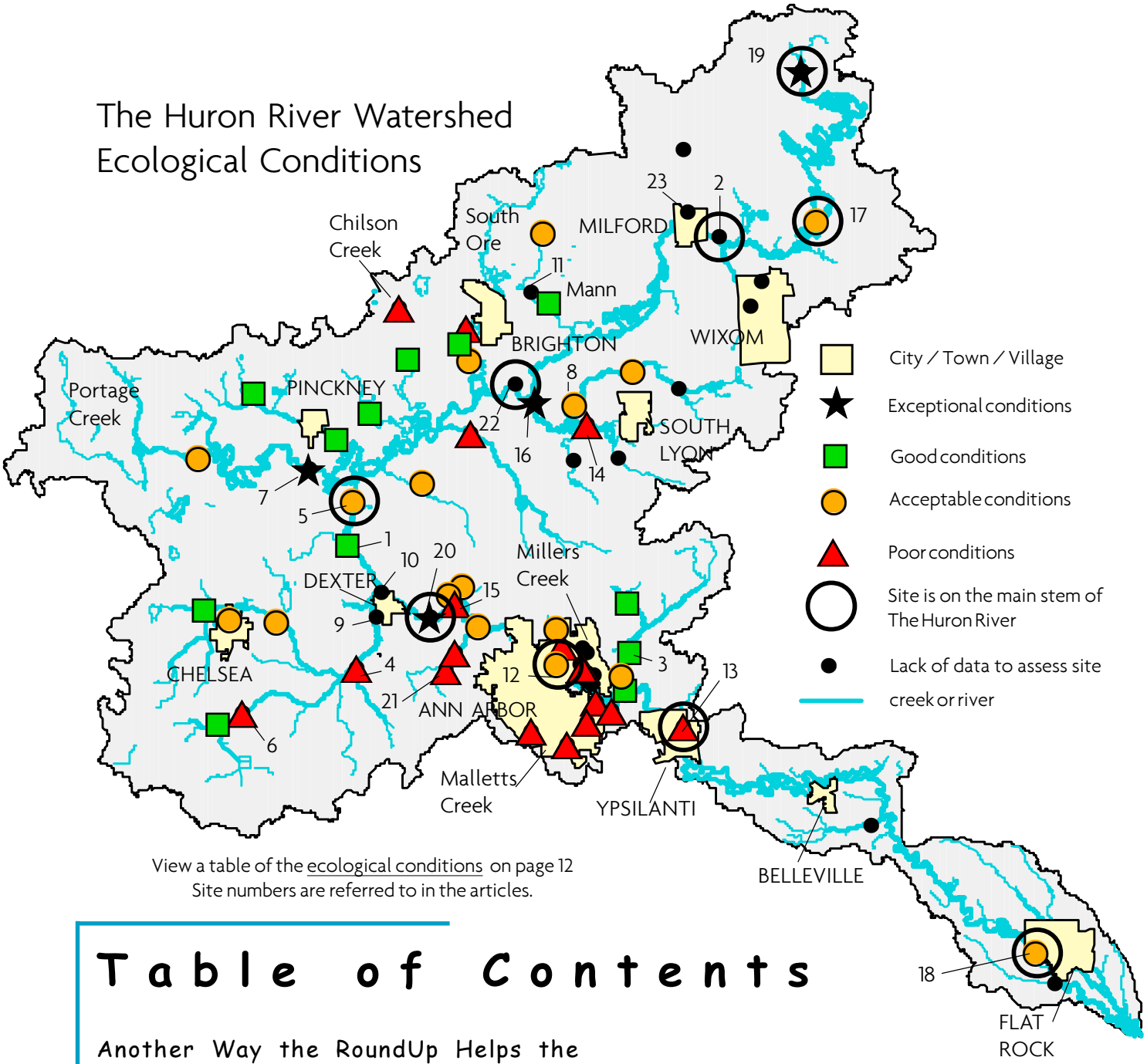
You can do something to help the river.

What are you doing?

These may seem like small steps to take, but small steps taken by lots of people can, over time, result in major improvements in our rivers and streams. And being small steps, they are actually very easy steps to take. You can do something to help the river. Please tell us about any changes you have made, no matter how small.

Families enjoy canoeing the Huron River in the Proud Lake State Recreation Area. Photo by Mara Werner.

The Huron River Watershed Ecological Conditions



View a table of the ecological conditions on page 12
Site numbers are referred to in the articles.

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The Best and Worst Sites

Like canaries in the mine aquatic insects are useful indicators of stream conditions, because they respond to deteriorating environmental conditions before we do.

The results from 2003 were combined with 10 previous years of monitoring data to assess the quality of sites throughout the watershed (see glossary, p.17 for definitions of underlined terms).

The map on the previous page shows the location and condition of our study sites in the watershed The ranking of poor, acceptable, good and exceptional is determined using a model created in 1999 by Prof. Michael Wiley at the University of Michigan. This year, HRWC worked with Mike to redesign the model adding information about landuse, conductivity, and stream temperature (see Temperature Results p.6). In general much of the watershed is in acceptable or good condition, while five areas are in exceptional condition. Downstream and urban locations are in poor condition.

Exceptional sites:
- support a rich diversity of aquatic insects

Poor sites:
- only a few insects are found here
- habitat quality is poor
- conductivity (a general measure of water quality) is poor

New Conclusions

With the collection this spring we completed the three years of data necessary to assess the ecological condition of two sites, one on the mainstem of the River and one on the south branch of Mill Creek. The ecological conditons are determined by the biological and physical conditions.

The ecological conditions at the new site in the River at Bell Road (#5 on map on p.2) are acceptable. Although the number of EPT families and sensitive families is slightly less then what we expected, the numbers of insect families is what we expect to find at a healthy site with similar characteristics. The habitat quality in this stretch of the Huron River is good. There is a variety of stream depths and flows, including riffles and pools, available to aquatic animals.

A notable problem at the Bell Road site is an abundance of zebra mussels. These invasive mussels physically attach to native mussels, interfering with basic functions such as feeding and reproduction.

Mill Creek at Klinger Road (#6 on map on p.2) has poor conditions, supporting fewer than half of the EPT families found just upstream at Manchester Road. The Pleasant Lake Drain joins Mill Creek in between these two sites, contributing water from The Sharon Shorthills and Freedom Township. Habitat conditions at the Klinger site are poor. The stream is uniform in depth, lacking deep, slow pools, and an abundance of fine sediments clogs some of the spaces where animals might live. The presence of both of the winter stonefly families suggests that the problems at this site result from organic pollution (such as fertilizers or human or animal waste).

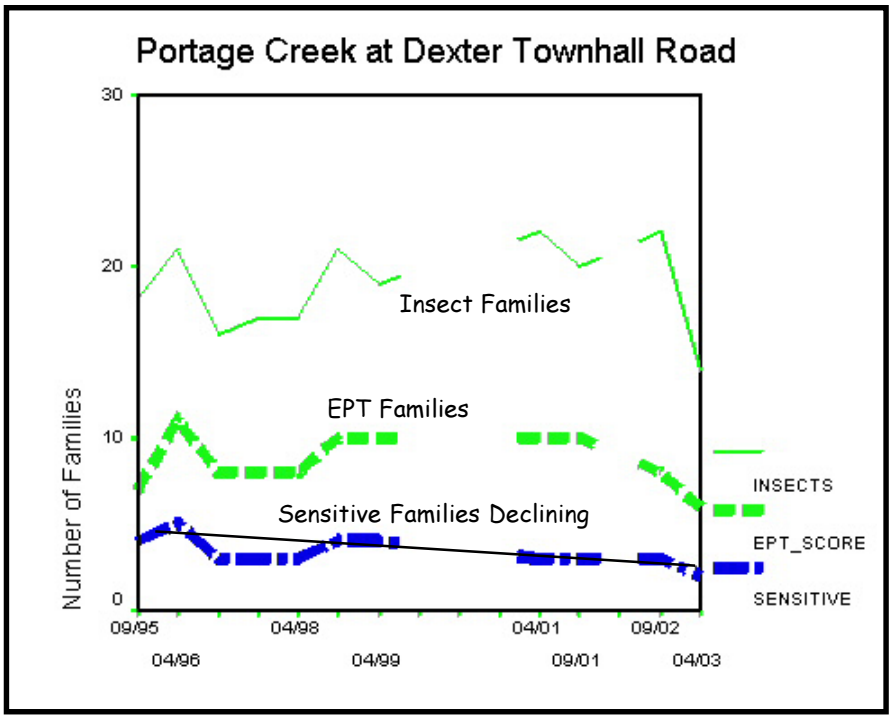
Pete Klaas and Emily Marinaro search for macroinvertebrates in a tray during the spring RoundUp. Photo: Carole Dubritsky

ACTION ITEM

You can help to keep your stream free of pollutants by minimizing the fertilizer and other chemicals that are put on your yard. Timing their use is also important. Let us help you with some simple guidelines.

Aquatic Population Declines

We identify a change (increase or decline) only when there is a statistically significant trend over the entire time of monitoring. See page 12 for a table of the 2003 results and a complete listing of the population changes.



We find fewer sensitive insect families in Portage Creek then we used to. Note: a break in the line indicates a period of no measurement

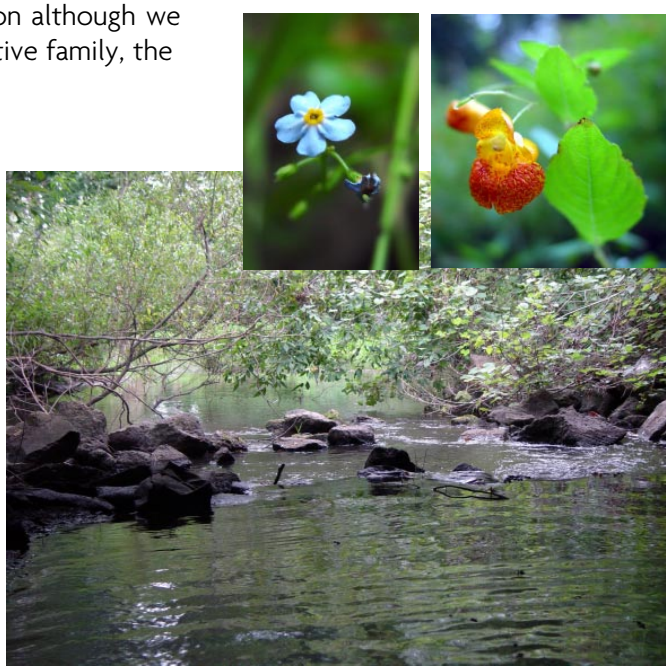
Portage Creek at Dexter Townhall Road Declines

Although we found more insect families (see glossary, p.17 for definitions of underlined terms) in this high quality stretch of Portage Creek (#7 on map on p.2) last fall, the number of sensitive families declined. This Spring, both the number of insect families and sensitive families were lower than in any previous collections. In recent years, we found on average one less sensitive family than we found prior to 2001. This winter we found only one winter stonefly family, compared to two or three in prior collections. This is of special concern since this stretch of Portage Creek is among the highest quality sites in the watershed. The conductivity at this site remains normal. We will assess the habitat quality in the summer of 2004 to see if there have been any physical changes.

Davis Creek at Doane Road Declines

Last Fall we reported the decline in the sensitive population that once thrived at Doane Road (#8 on map on p.2). The results this spring continue to show an impoverished sensitive population although we did find one sensitive family, the Perlodid stonefly.

This spring we added three additional monitoring sites on parts of Davis Creek (see map on page 6). If you would like to know more about this hidden treasure, request a copy (either print or digital) of the Davis Creek Report from Joan at (734) 769-5971, or jmartin@hrwc.org.



Left: Dallas, Kari, and Ryan search a tray for aquatic insects during the spring RoundUp. Photo: Ann Gladwin

Right: Photos from Davis Creek at Doane Road. Photos: John Cramer

New Site Results

Mill Creek

In January, we added two sites on Mill Creek to gather information before the removal of the Dexter Dam. Volunteers monitored about one mile upstream of the dam at Shield Road (#9 on map on p.2), which is the first area upstream of the dam with a firm stream bottom. Closer to the dam, the slow water causes fine sediments to settle out, creating a soft stream bottom which does not provide ideal homes for many aquatic insects. When the dam is removed, biologists say the stream channel may adjust, possibly impacting the biology as far upstream as Shield Road. We also added a site immediately downstream of the dam at Warrior Park (#10 on map on p.2), which is also the study site of 6th graders at Wylie Middle School.

In January we found both families of winter stoneflies (see glossary, p.17 for definitions of underlined terms) at Shield Road and Warrior Park.

In April we found one sensitive family at Shield Road and two sensitive families, including the brush-legged mayfly (Family Isonychiidae) in the site at Warrior Park.

ACTION ITEM

You can help to prevent bank erosion becoming a problem for your creek by keeping stormwater on your property. Next time it rains, look around your yard for gullies or puddles and consider landscaping to either help the water infiltrate or support a bed of water-loving plants. We are available to talk to you about simple and interesting ways to do this.

Davis Creek

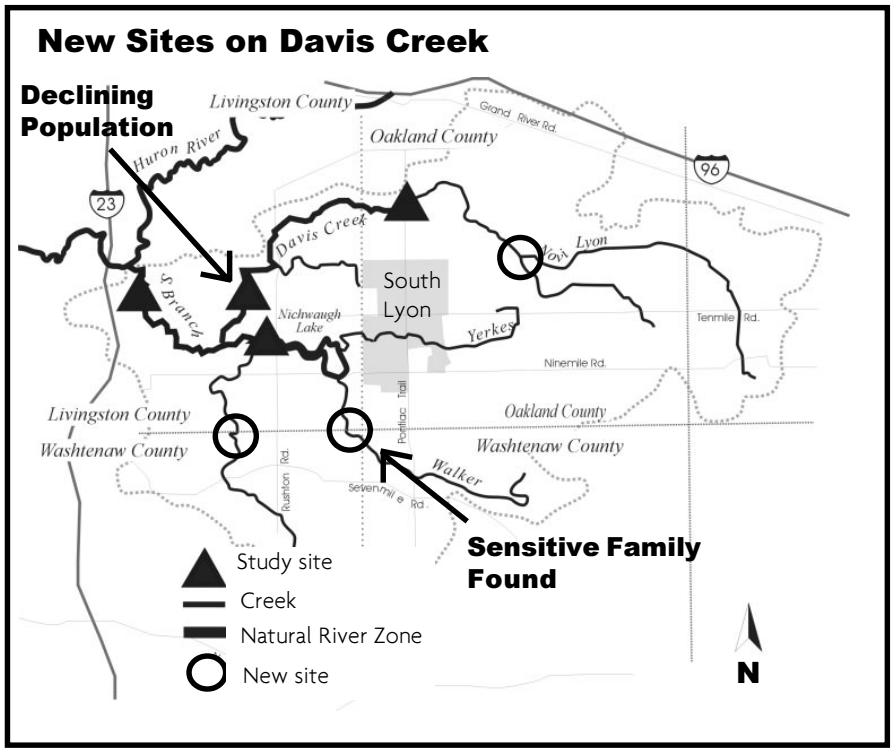
The map below shows the location of three new sites on the Davis Creek System. During the spring RoundUp, the only new site where we found any sensitive families was on Walker Creek at Eight Mile (the county line on the map), where we collected the prong-gill mayfly (Family Leptophlebiidae).

Sensitive Families at other New Sites

Only one of our seven new sites on Millers Creek had a sensitive family this April (See Unusual Results p.6)

No sensitive families have been found at our sites on Pettibone Creek, which we began studying in 2001.

In Woodruff Creek at Buno Road (#11 on map on p.2) we found a prong-gill mayfly (Family Leptophlebiidae).



Sue Lillie is about to take a water sample after breaking through the ice at Mill Creek at Shield Road during the January Stonefly Search. Photo: John Lillie.

Unusual Results

Rich diversity found here!

John Stahly's team found a record high number of insect families (17) (see glossary, p.17 for definitions of underlined terms), EPT families (10), *and* sensitive families (5) in Huron Creek (#1 on Map on p.2)! Great job team!

River Firsts!

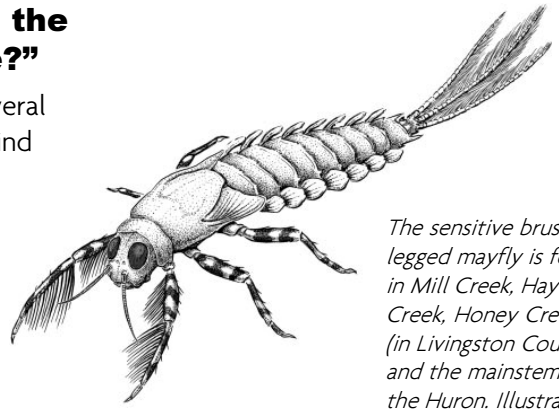
♦ The team led by Noemi Barabas found the sensitive Perlodid stonefly in Millers Creek at Meadows, which is the downstream end of Millers Creek, just before it empties into the River in Geddes Pond in Ann Arbor's Gallup Park. This is the first time we've found a sensitive family at this site! It is possible that the sensitive insect swam upstream from the River. We have four monitoring sites on the mainstem of Millers, where we have found sensitive families only twice (one family at Glazier in 1995 and 1996).

More than 130 people in January and 160 in April monitored about 60 sites in a single day! Both events were very successful. (Names of volunteers are on p. 11)

♦ For the first time, a winter stonefly was found in the River at the Proud Lake State Recreation Area (#2 on map on p.2). Don Rottiers and Bob Smith led the team that found the broad-back stonefly (Family Taeniopterygidae)!

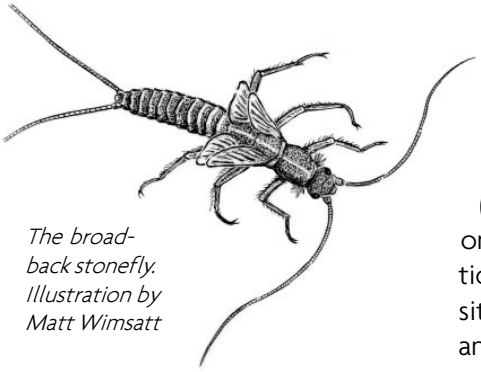
"Where have all the Stoneflies Gone?"

Although there are several sites where we never find winter stoneflies (see p.15), the following results were unusual in that we found less diversity then in previous collections.



The sensitive brush-legged mayfly is found in Mill Creek, Hay Creek, Honey Creek (in Livingston County), and the mainstem of the Huron. Illustration by Matt Wimsatt

This was the first time we were unable to find the broad-back stonefly (Family Taeniopterygidae) during our winter collection in Fleming Creek at the Botanical Gardens (#3 on map on p.2) or Mill Creek at Jackson Road (#4 on map on p.2). However, the slender winter stonefly (Family Capniidae) was found at both sites.



The broad-back stonefly. Illustration by Matt Wimsatt

We were unable to find any stoneflies in Honey Creek at Jackson Road (#21 on map on p.2) or in the River at US 23 (Livingston County #22 on map on p.2) this year. Physical conditions are poor at the Honey Creek site. In addition to bank erosion and a lack of stable habitat, it has a water quality problem that we see in the chronically high conductivity levels. We have no idea why there seem to be so few winter stoneflies at the US 23 site. In previous years we have had to revisit the site in order to find the one area with stoneflies.

Mara Werner measured a conductivity level of 1634uS in Honey Creek at Jackson Road this July, well above the acceptable level of 800uS. This January we were disappointed at the lack of winter stoneflies at this site.

Temperature Results

Too Hot

Stream temperatures put limits on the type of macroinvertebrate and fish communities that can live in a stream. An average summer stream temperature of about 72°F is the warmest water that will support cold water fish, such as sculpin and trout. Smallmouth bass, which are known to be plentiful in the Huron River, can live in waters up to 77°F. Other fish that can survive in similar temperatures include rockbass, sunfish, carp, catfish, suckers and mudminnows. Average summer stream temperatures above 77°F exclude many fish and cool water insects. Dams and runoff from hot pavement and other impervious surfaces often cause an increase in stream temperature.

> temperatures above 77°F stress many aquatic animals

Four of our study sites were above 77°F, which stresses many sensitive aquatic animals. Two of these sites are on the mainstem of the Huron River, in Ann Arbor at Island Park (#12 on map on p.2), and in Ypsilanti at Cross Street (#13 on map on p.2). The other two sites are downstream of dams in Greenoak (formerly referred to as Davis) Creek at Rushton Road (#14 on map on p.2), and Boyden Creek at Huron River Drive (#15 on map on p.2), where warm water flows over the top of the dam.

Temperature Fluctuations

The majority of our study sites experience an extreme fluctuation in summer temperature, as defined by a difference of more than 10 degrees Celsius between the average minimum and average maximum stream temperature. Extreme fluctuations have been found to decrease fish diversity at warm sites (Wehrly, et.al, 2003). Ten of our study sites are warm with extreme fluctuations, including areas of Malletts, South Ore, Griggs, Mann, South Branch of the Huron River at Silver Lake Road (#16 on map on p.2), the headwaters of Portage Creek, and the headwaters of the Huron River at Commerce Road.

Only one of all of our study sites, Pettibone Creek at Commerce Road (#23 on map on p.2), has low temperature fluctuations, varying only 5°C. This site is just downstream of the Mill Pond Dam in Milford, and the creek remains warm throughout the summer.

Well Done Team!
90 volunteers monitored the minimum and maximum stream temperatures at 65 study sites during the summer months of 2000-2002.

Average temperature from the headwaters to the mouth on the mainstem of the Huron River.

# on map on p.2	Location	Avg Temp.*	DA(MI^2)†	%Imperv‡
19	White Lake Rd	64	14	8
17	Commerce Rd	75	48	16
2	Proud Lake Rec. Area	NA	84	19
5	Bell Road	74	524	12
20	Zeeb Road	72	690	10
12	Island Park	77	743	11
13	Cross Street	77	807	11
18	Flat Rock	76	866	12

*The average temperature in July and August

† Drainage area in square miles

‡ This is the percent of roads, roofs, and other impervious surfaces in the catchment of the study site (based on landuse data from 2000).

Temperature Change in the River

The headwaters of the Huron River are cold, but only a few miles downstream at Commerce, the river has risen 11°F and remains warm through Flat Rock.

In Ann Arbor (at Island Park) and Ypsilanti (at Cross Street), the river reaches temperatures that restrict the kinds of fish and cool water insects that can survive there.

Reference: Wehrly K.E., M.J. Wiley, and P.W. Seelbach. 2003. "Classifying Regional Variation in Thermal Regime Based on Stream Fish Community Patterns." American Fisheries Society 132:18-38.

Temperature Results (average temperature in July and August)

Cold Study Sites
<66.2°F

Boyden Creek: Delhi
Boyden Creek: Golf Course
Chilson Creek: Brighton Road
Davis Creek: Doane Road
Davis Creek: Pontiac Trail
Fleming Creek: Geddes
Honey Creek (Liv. Co.): Darwin Rd.
Honey Creek: Pratt Road
Huron Creek: near the mouth
Huron River:White Lake Rd
Mill Creek: Manchester Rd
Mill Creek: Ivey Road
Millers Creek: Glazier
Millers E. Branch at Baxter Road
Norton Creek: West Maple Road
Woodruff: Maxfield Rd.

Cool Study Sites
66.2°F-71.6°F

Arms Creek: Walsh Road
Chilson Creek: Chilson Road
Fleming Creek: Bot Gardens
Fleming Creek: Radrick Farms
Fleming Creek: Warren
Hay Creek
Honey Creek: Jackson
Honey Creek: Wagner
Horseshoe Creek
Hummocky Lick: M-36
Malletts Creek: Main St.
Mill Creek: Jackson Road
Mill Creek: Fletcher Road
Mill Creek: Klinger Road
Mill Creek: Letts at M-52
Millers at Hubbard
Millers at Huron Parkway
Millers at Meadows
Millers trib at Green Road
Millers trib at Lakehaven Court
Millers W. Branch at Plymouth Road
Port Creek at Armstrong Rd.
Swift Run
Traver Creek: Broadway
Traver Creek: Dhu Varren

Warm Study Sites
>71.6°F

☹ Boyden Creek: Huron R Dr (15)
☹ Greenoak Creek: Rushton Road (14)
Griggs Creek
Huron River at Bell Road
Huron River at Proud Lake Rec. Area
☹ Huron River Island Park (12)
Huron River: Commerce Rd
☹ Huron River: Cross Street (13)
Huron River: Flat Rock
Huron River: Zeeb Road
Malletts Creek: Chalmers
Malletts Creek: I-94
Malletts Creek: Scheffler
Mann: VanAmburg Road
Norton Creek: Loon Lake Outlet
Pettibone Creek at Commerce Road
Pettibone Creek at Livingston Road
Portage Creek: Unadilla
Portage: Dexter-TownHall Rd
S.Br. Huron River: Silver Lake
South Ore Creek: Bauer Rd
South Ore Creek: Hamburg R
South Ore Creek: Lake Ridge
Woodruff Creek: Buno Rd.

☹ These four sites average greater than 77°F, limiting the aquatic animals that can live at these sites. The number in parentheses refers to the location on the map on page 2.

All but the most downstream portion of Boyden Creek remains cold in the summer. Photo: Ed Marman

ACTION ITEM

The following sites lack critical information necessary to assess the conditions of the site. If you would like to collect this information, please call or email Joan at (734) 769-5971 or jmartin@hrwc.org.

Huron River at Proud Lake State Recreation Area
Summer stream temperature

Huron River at US-23 (Livingston County)
Summer stream temperature

Norton Creek at West Maple
Habitat Assessment

Highlights from the Millers Creek Study

Stream Flow

In spring 2002 seven sites were added on Millers Creek in Ann Arbor as part of an in-depth study that will be used to create a plan to improve Millers Creek. Millers Creek flows through the Univerity's North Campus, then along Huron Parkway and enters the Huron River in Gallup Park.

You can access the progress of the Millers Creek study anytime by calling 734 761-4684 or visiting the website: www.aamillerscreek.org.

Current flows in Millers Creek greatly exceed what is reasonable for a healthy creek. Even small storms cause the flow to surge and disturb the substrate in the creek making it inhospitable to aquatic animals.

In April, the flow in Millers Creek increased from 30 gps (gallons per second) to 1,372 gps (4 cubic feet per second (cfs) to 184 cfs) in about two hours! That is highly unusual. In a more natural stream, such as Fleming Creek, we barely notice the creek rising during a small storm, and during a larger storm, the creek rises over days, as the water slowly travels through the ground to the creek.

Conductivity

There is a surprising range of conductivity values in some areas of Millers Creek. Conductivity is a general measure of water quality and refers to the amount of dissolved ions present in the water. Both the highest and the lowest values seen in the Huron system are from the Plymouth site with values from 166 uS (which is comparable to rainwater) to 34,700 uS, (which approaches the conductivity of saltwater. The Atlantic Ocean is about 43,000 uS[1]). The extremely high readings at Plymouth Road were during the winter months when salt was used on the road for deicing.

Request a copy of the previous Monitoring Gazette for a summary of habitat results in Millers Creek.

ACTION ITEM

If you are interested in investigating conductivity levels upstream of Plymouth Road, contact the Adopt-A-Stream Program at (734) 769-5971.

[1] From Water on the Web, a collaborative effort of The University of Minnesota, The National Science Foundation, Minnesota industries, communities and government agencies. http://wow/nrri/umn.edu/wow/

In all but one study site on Millers Creek the average conductivity is excessive (above 800 uS).

LOCATIONS	Conductivity Minimum (uS)	Conductivity Maximum (uS)	Conductivity Average (uS)	# of samples	Year monitoring began
Glazier	1,120	4,360	2,187	30	1995
W. Branch at Plymouth Road	166	34,700	6,652	18	2002
E. Branch at Baxter Road	475	15,240	2,979	8	2002
Tributary at Lakehaven Court	948	1,309	1,154	8	2002
Tributary at Green Road	647	992	765	5	2002
Huron Parkway	1,017	2,060	1,573	7	2002
Hubbard	733	7,920	2,549	5	2002
Meadows	560	2,470	1,756	19	2002

Follow-up at Troubled Sites

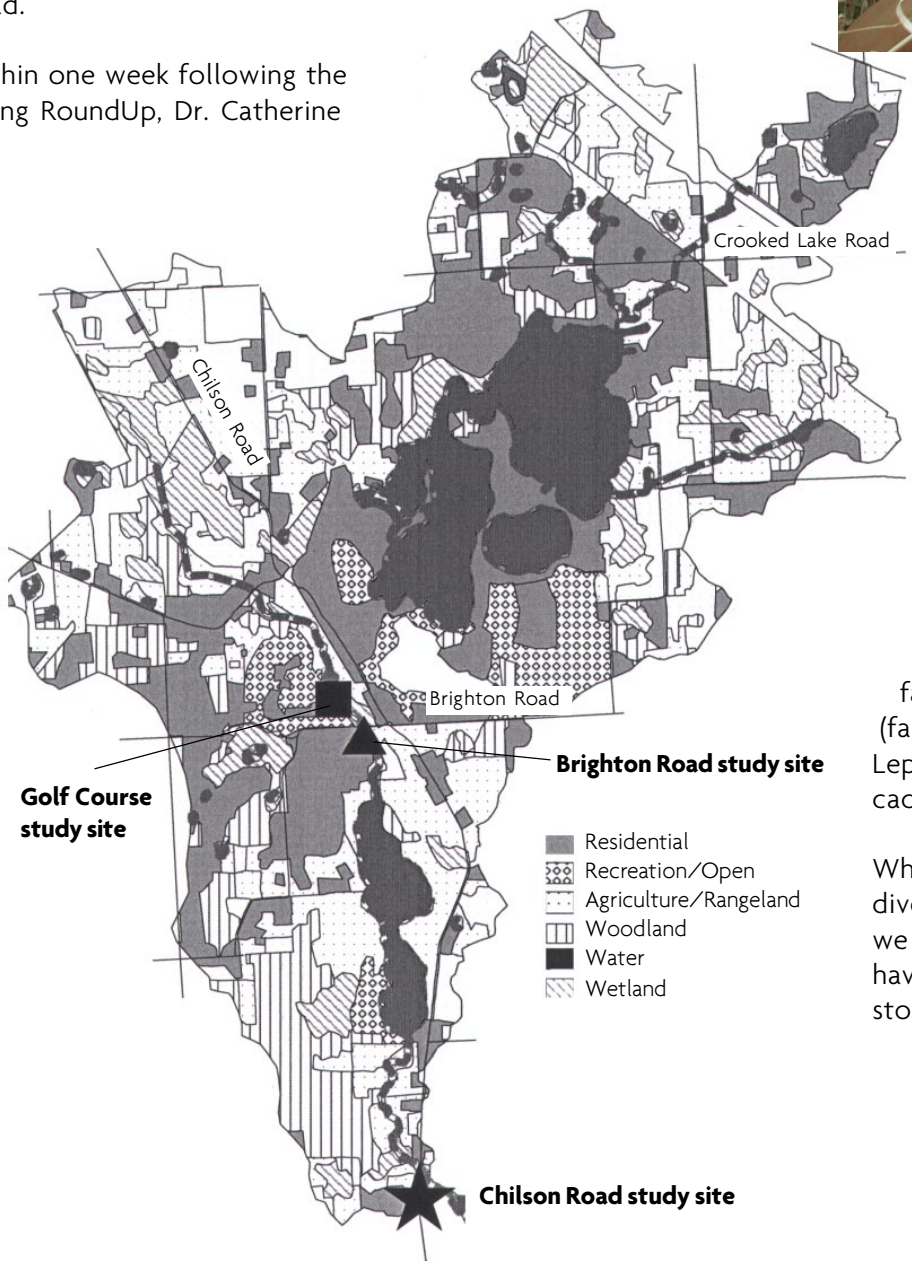
The investigation of Chilson Creek

Our team was unable to find winter stoneflies at Brighton Road during the January search. However, both winter stonefly families were found upstream at the golf course and downstream at the Chilson Road site.

Results from the spring RoundUp were typical, yielding no sensitive families at the Brighton Road site or the Golf Course while 4 sensitive families were found downstream at Chilson Road.

Within one week following the spring RoundUp, Dr. Catherine Riseng (a volunteer who has studied macroinvertebrate populations in Michigan and Kentucky streams) led a special watershed action team (SWAT) to investigate the population in Chilson Creek at Brighton Road.

Dr. Catherine Riseng takes a close look at a rock from Chilson Creek. Photo: John Lillie



With an extensive search, the SWAT team found a healthy population, similar to results found in the fall of 1999, including two sensitive families, the prong-gill mayfly (family Leptophlebiidae) and the Lepidostomatid case-making caddisfly.

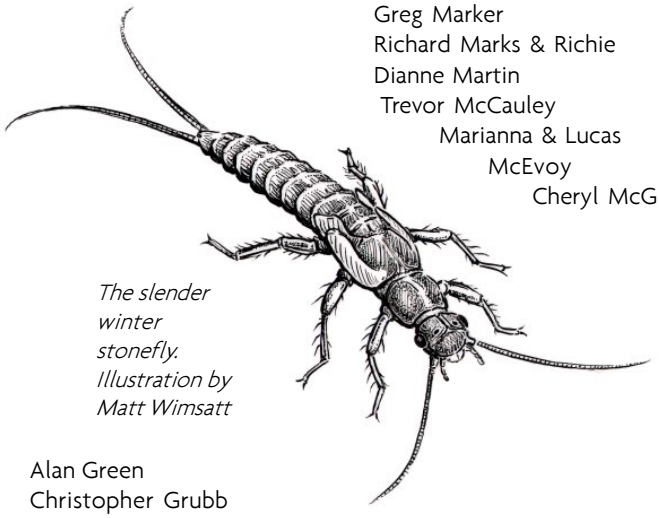
While it was reassuring to find a diverse population at this site, we remain puzzled as to why we have never found winter stoneflies here.

Thank you

to all the environmental stewards who monitored in January and April, 2003

In total, over 450 volunteers monitor more than 70 sites in the Huron River System.

Gretchen Alexander
Herb Alvord
Phil Argiroff
Sonja and Nathan Bair
Mary and Alex Bajcz
Julia Bandow
Noemi Barabas
Peter Bednekoff
Michael Benham
Brenda Bently-Goenka
Laurel Beyer
Tom Bingham
Matthew Bird
David Blough
Stani V. Bohac
Rochelle Breitenbach
Dave Brooks
Sharon Brooks
Jim Bryson
Lee Burton
Ray Caleca
Dean Carpenter
Dennis Carroll
Barb Chamness
James & D. Chamness
Wayne Cheyne
Elizabeth Clay
John Clifford
Linda Lucchesi Cody
Rodney Cox
Bill Cusumano
Emily Damstra
Ray Davio
Andrea DeAgostino & the Smiths
George DeAngelis
Tim Dekker
Tom Deku
Sean Demers
Andrew DeZeeuw
Tom DiCorcia
Nicole Dolney
Margaret Doub
Carole Dubritsky
Barb Duperron
Kent Early
Megan Edgar
Marilyn Edington
Thomas A Edsall
Karen Edwards
Doug Egedy
Lori Emery
Joe Esseichick
Dan Ezekiel
Jim Fackert
Neal Foster
Ron Gamble
Phil Giles
Jane Gillies
Ann Gladwin
Jesse Gordon
Ken Gottschlich
Kathie Gourlay



The slender winter stonefly. Illustration by Matt Wimsatt

Alan Green
Christopher Grubb
Cyndee Gruden
Fred Hanert
Fay Hansen
Linda Harris
Kevin Hartgerink
Ted Hejka
Rob Henderson
Julia Henshaw
Linda Hiller
Gwen Hinchey
Jennifer Hollenbeck
Nan Houser
David Howell
Tom Hughes
Rajeev Jain
Tom Jameson
Zane Janicki
Tim Jeris
Justin Johnson
Kristin Judd
Meroe Kaericher
Janet Kahan,
Steven J. Kapeller
Janet Kauffman
Sue and Pete Klaas
Amanda Klain
Mike Kleiner
Andrea Kline
Dick Knopf & Dea
Patrick Korth
Michelle LaRose
Betty & Matthew Law
Ric Lawson
Mike Lemon
Brent Lignell
John Lillie
Sue Lillie
Pat Little
Hilary Lowe
Mary Maliarik
Richard Manczak
Emily Marinaro
Greg Marker
Richard Marks & Richie
Dianne Martin
Trevor McCauley
Marianna & Lucas McEvoy
Cheryl McGill
Carol and Tom McGrath
Lynn Meadows
Kathy & Dave Melmoth
Karla Metzger
Brian Michalik
Linda Michele-Dobel
Jean Milligan
Colin Mindel
Laura Mindel
John & Tui Minderhout
Tui Minderhout
Dallas Moore
B J Morrison
Roger Mourad
Mike Mouradian
Steve Musser
Paul Nugent
Diane O'Connell
Marcela Orlandea
Spyridon Pavlidis
Jackson Pellet
Jill Pernicano
Karen Pierce
Martha Pollack
Ellen Rambo
Dora Passino-Reader
Lee and Simon Ren
Bob Richards
Carrie Ricker
Joe Riley
Catherine Riseng
Peggy Roberts
Bill Rodgers
Don Rottiers
Rob Rougeau
Esther Rubin
Victor Ruehle
Anne Rueter
Theresa Samosiuk
William Samuels
Chuck Scherwitz
Charles Scott
Bill Seib
Candace Shelly
Maria Silveria
Hal Smith
Bob Smith
Andrew Smith
Jim Smith
Preston Smith
Mary Spence
John Stahly
Alan Stefan
Margaret Steiner
Lia Stevens
Nancy Stokes
Kathleen Sullivan
Nancy Sweet
Brian Swisher
Dave Szczygiel
Ryan Tefertiller
Waylon Thacker
Chad Theismann
Dan Thiry
Sandy Thomas
Erin Trame
Lewis Tripp
Carrie Turner
Murat Ulasir
Ben Upton
Amy Vincent
Kari Walworth
Fred Wark
Mark Weiss
Don Wilcox
Jay Williams
Scott Williams
Wayne & Chris Wilson
Larry Wolicki
Chris Wood
Al Wooll
John Zielinski
Ann Zinn
Anita Zot

Please let us know if we missed you.

Spring 2003 Results and Population Changes

LOCATION of sites samplied in 4/03	Insect Families	EPT Families	Sensitive Families	Population Diversity	Ecological Conditions*
Arms Creek: Walsh Road	10	6	1	stable	3
Boyden Creek: Delhi	15	5	2	stable	3
Boyden Creek: Golf Course	13	5	1	stable	3
Boyden Creek: Huron R Dr	3	1	0	stable	4
Chilson Creek at Golf Course	10	6	0	NEW	NA
Chilson Creek: Brighton Road	12	5	0	stable	4
Chilson Creek: Chilson Road	15	8	4	stable	2
Davis Creek: Doane Road	14	7	**1**	**DEC**	3
Davis Creek at 11 Mile	7	1	0	NEW	NA
Davis Creek: Pontiac Trail	7	4	1	stable	3
Fleming Creek: Bot Gardens	11	6	2	stable	2
Fleming Creek: Geddes Rd.	**19**	**6**	2	**INC**	2
Fleming Creek: Radrick Farms	10	6	1	stable	3
Fleming Creek: Warren	16	7	3	stable	2
Greenoak Creek: Rushton Road	8	3	0	stable	4
Griggs Drain	11	4	1	stable	NA
Hay Creek	8	4	1	stable	2
Honey Creek: Jackson	6	3	1	stable	4
Honey Creek: Pratt	5	2	0	stable	4
Hummocky Lick at M-36	15	6	2	stable	2
Huron Creek: near the mouth	17	10	**5**	**INC**	2
Huron River: Commerce Rd	11	5	0	stable	3
Huron River at Bell Road	11	4	1	stable	3
Huron River at Island Park	10	5	2	stable	3
Huron River at Proud Lake Rec. Area	14	7	1	stable	NA
Huron River: US-23 (Liv. Co.)	17	8	2	stable	NA
Huron River: Zeeb Road	**20**	**11**	5	**INC**	1
Malletts Creek: Chalmers	6	1	0	stable	4
Malletts Creek: Scheffler	2	1	0	stable	4
Mann: VanAmburg Road	11	8	3	stable	2

*Ecological Conditions: 1 = Exceptional, 2 = Good, 3 = Acceptable, 4 = Poor, NA = not enough data to assess condit

Bold numbers indicate a population change (**INC**=increasing, **DEC**=declining) that is statistically significant at the 10% level or less. See explanation on p.4

Spring 2003 Results and Population Changes

LOCATION of sites samplied in 4/03	Insect Families	EPT Families	Sensitive Families	Population Diversity	Ecological Quality*
Mill Creek: Ivey Road	15	9	3	stable	2
Mill Creek: Jackson Road	12	**7**	2	**INC**	4
Mill Creek: Klinger Road	9	3	1	stable	4
Mill Creek: Manchester Rd	8	4	2	stable	2
Mill Creek at Shield	7	4	1	NEW	NA
Mill Creek at Warrior Park	13	6	2	NEW	NA
Millers (E. Branch) at Baxter Road	3	0	0	NEW	NA
Millers Creek: Glazier	6	**1**	0	**INC**	4
Millers trib at Green Road	6	1	0	NEW	NA
Millers at Hubbard	3	0	0	NEW	NA
Millers at Huron Parkway	3	1	0	NEW	NA
Millers trib at Lakehaven Court	5	1	0	NEW	NA
Millers at Meadows	9	2	1	NEW	NA
Millers (W. Branch) at Plymouth Road	2	0	0	NEW	NA
Norton Creek: Loon Lake Outlet	4	1	0	NEW	NA
Norton Creek: West Maple Road	8	3	1	stable	NA
Pettibone Creek at Commerce Road	12	4	0	NEW	NA
Pettibone Creek at Livingston Road	10	4	0	NEW	NA
Port Creek at Armstrong Rd.	4	1	0	stable	NA
Portage: Dexter-TownHall Rd	14	6	**2**	**DEC**	1
South Branch of Huron River: Silver Lake	10	3	1	stable	1
South Ore Creek: Bauer Rd	15	9	4	stable	2
South Ore Creek: Hamburg R	12	6	1	stable	3
South Ore Creek: Lake Ridge	7	2	0	stable	4
Swift Run	4	0	0	stable	4
Tobin Creek at 8 Mile	2	0	0	NEW	NA
Traver Creek: Broadway	**6**	1	0	**DEC**	4
Traver Creek: Dhu Varren	7	2	0	stable	3
Walker Creek at 8 Mile	9	4	1	NEW	NA
Wooduff Creek: Buno Rd.	13	7	1	NEW	NA

*Ecological Conditions: 1 = Exceptional, 2 = Good, 3 = Acceptable, 4 = Poor, NA = not enough data to assess condit

Bold numbers indicate a population change (**INC**=increasing, **DEC**=declining) that is statistically significant at the 10% level or less. See explanation on p.4

Winter Stonefly Results at January 2003 Sites

LOCATION	1995	1996	1997	1998	2000	2001	2002	2003
Arms Creek: Walsh Road		Perlodidae Taeniopterygidae Capniidae			Taeniopterygidae	Capniidae Taeniopterygidae	Capniidae Perlodidae	Capniidae
Boyden Creek: Delhi	Capniidae	Taeniopterygidae			Capniidae	Capniidae Taeniopterygidae	Capniidae	Capniidae
Boyden Creek: Golf Course		Taeniopterygidae Capniidae	Capniidae	Capniidae Taeniopterygidae Perlodidae		Capniidae	Perlodidae Capniidae Taeniopterygidae	Capniidae
Chilson Creek: Brighton Road				NONE	NONE	NONE	NONE (and None upstream of site)	NONE
Chilson Creek: Chilson Road			Perlodidae	Perlodidae		Perlodidae Taeniopterygidae	Perlodidae Taeniopterygidae	Perlodidae Taeniopterygidae
Chilson Creek: Golf Course							Taeniopterygidae	Capniidae Taeniopterygidae
Davis Creek: Doane Road		Taeniopterygidae Capniidae	Perlodidae Taeniopterygidae Capniidae		Capniidae Taeniopterygidae	Taeniopterygidae Capniidae		Taeniopterygidae Capniidae
Davis Creek: Pontiac Trail		Perlodidae Capniidae	Perlodidae Taeniopterygidae Capniidae		Perlodidae	Perlodidae Capniidae	Perlodidae	Perlodidae
Davis Creek: Silver Lake				Taeniopterygidae Perlodidae	Taeniopterygidae	Taeniopterygidae	Perlidae Taeniopterygidae	
Fleming Creek: Botanical Gardens	Taeniopterygidae Capniidae			Taeniopterygidae Capniidae	Taeniopterygidae Capniidae		Taeniopterygidae Capniidae	Capniidae
Fleming Creek: Geddes Rd.	Capniidae		Capniidae		Capniidae	Capniidae	Capniidae	Capniidae
Fleming Creek: Warren		Capniidae	Capniidae	Capniidae		Capniidae	Capniidae	Capniidae
Greenoak Creek: Rushton Road				NONE	NONE	NONE	NONE (and None downstream of site)	None
Griggs Drain			Perlodidae	Capniidae	Capniidae Taeniopterygidae	Taeniopterygidae Capniidae Perlodidae	Taeniopterygidae Capniidae Perlodidae	
Hay Creek				Taeniopterygidae Capniidae	Capniidae Taeniopterygidae	Capniidae	Taeniopterygidae Capniidae	
Honey Creek (Liv. Co.): Darwin Rd.				Taeniopterygidae Capniidae	Taeniopterygidae Capniidae	Capniidae Taeniopterygidae	Taeniopterygidae Capniidae	Capniidae
Honey Creek: Jackson					Capniidae	Capniidae	Capniidae (upstream and downstream of road)	None
Honey Creek: Pratt	Taeniopterygidae Capniidae	Capniidae	Capniidae	Capniidae		NONE	Perlodidae	Taeniopterygidae
Honey Creek: Wagner	Capniidae	Capniidae			Capniidae	Capniidae	Taeniopterygidae	

Empty cells indicate the site was not sampled.
No sites were sampled in 1999 due to weather conditions.

Winter Stonefly Results at January 2003 Sites

LOCATION	1995	1996	1997	1998	2000	2001	2002	2003
Horseshoe Creek		Taeniopterygidae	Taeniopterygidae Capniidae	Taeniopterygidae Capniidae	Taeniopterygidae	Taeniopterygidae Capniidae		Taeniopterygidae
Hummocky Lick (Liv. Co.) at M-36						NONE	Capniidae	NONE
Huron Creek	Capniidae Taeniopterygidae	Capniidae Taeniopterygidae	Capniidae Taeniopterygidae			Capniidae Taeniopterygidae		Capniidae Taeniopterygidae
Huron River at Bell Road						Taeniopterygidae Capniidae	Taeniopterygidae	Taeniopterygidae Capniidae
Huron River: Commerce Rd				NONE	Perlodidae	Perlodidae	Perlodidae	
Huron River: Cross Street			NONE		NONE	NONE	Taeniopterygidae Capniidae	Taeniopterygidae
Huron River: Flat Rock						Taeniopterygidae	Taeniopterygidae Capniidae	Taeniopterygidae Capniidae
Huron River at Island Park						Taeniopterygidae Capniidae	Taeniopterygidae Capniidae	Taeniopterygidae Capniidae
Huron River: LeForge Rd.							NONE	
Huron River at Proud Lake Rec. Area						NONE	NONE	Taeniopterygidae
Huron River: US-23					Taeniopterygidae	Taeniopterygidae	Taeniopterygidae	NONE
Huron River: White Lake Road	Perlodidae Taeniopterygidae	Perlodidae			Perlodidae Taeniopterygidae		Taeniopterygidae Perlodidae	Taeniopterygidae Perlodidae
Huron River: Zeeb Road					Capniidae Taeniopterygidae	Taeniopterygidae Capniidae	Taeniopterygidae Capniidae	Taeniopterygidae Capniidae
Malletts Creek: Chalmers		NONE	NONE	NONE		NONE	NONE	NONE
Malletts Creek: I-94	NONE	NONE	NONE	NONE	NONE	NONE		NONE
Malletts Creek: Main St.					NONE	NONE	NONE	NONE
Malletts Creek: Scheffler			NONE	NONE		NONE	NONE	
Mann Creek: VanAmberg		Perlidae	Perlidae			Perlidae Taeniopterygidae	Perlidae Taeniopterygidae	Taeniopterygidae
Mill Creek: Fletcher Road		Taeniopterygidae		Taeniopterygidae Capniidae		Taeniopterygidae Capniidae	Taeniopterygidae	
Mill Creek: Ivey Road	NONE	Perlodidae Taeniopterygidae		Perlodidae		Perlodidae Taeniopterygidae	Perlodidae	Perlodidae
Mill Creek: Jackson Road			Taeniopterygidae Capniidae	Taeniopterygidae Capniidae		Taeniopterygidae Capniidae		Capniidae
Mill Creek: Klinger Road						Taeniopterygidae Capniidae	Taeniopterygidae Capniidae	
Mill Creek (Letts) at Vets Park	Taeniopterygidae Capniidae	Taeniopterygidae	NONE	Taeniopterygidae Capniidae	Taeniopterygidae Capniidae		Capniidae	Capniidae

Winter Stonefly Results at January 2003 Sites

LOCATION	1995	1996	1997	1998	2000	2001	2002	2003
Mill Creek: Manchester Rd					NONE	Capniidae Taeniopterygidae	Nemouridae	NONE
Mill Creek: Shield								Capniidae Taeniopterygidae
Mill Creek: Warrior Park								Capniidae Taeniopterygidae
Millers Creek: Baxter								NONE
Millers Creek: Glazier Way			NONE	NONE	NONE		Capniidae	NONE
Millers Creek: Green								Capniidae Nemouridae
Millers Creek: Hubbard								NONE
Millers Creek: Huron Parkway								NONE
Millers Creek: LakeHaven								NONE
Millers Creek: Meadows								NONE
Millers Creek: Plymouth Road								NONE
Norton Creek: West Maple Road						NONE	NONE	NONE
Norton Creek: Loon Lake Outlet						NEW SITE	NONE	NONE
Pettibone Creek: Commerce						NEW SITE	NONE	NONE
Pettibone Creek: Livingston Rd.						NEW SITE	NONE	NONE
Port Creek at Armstrong Rd.					NONE	NONE	NONE	NONE
Portage: Dexter-TownHall Rd				Taeniopterygidae Capniidae	Taeniopterygidae Perlodidae Capniidae	Perlidae Taeniopterygidae	Taeniopterygidae Perlidae Capniidae	Taeniopterygidae
Portage Creek: Unadilla					Capniidae	NONE	NONE	NONE
South Ore Creek: Bauer Rd					Taeniopterygidae	NONE	Taeniopterygidae Perlodidae	Taeniopterygidae
South Ore Creek: Lake Ridge					NONE	NONE	NONE	NONE
South Ore Creek: Hamburg	Taeniopterygidae Capniidae	Taeniopterygidae Capniidae	Taeniopterygidae		Taeniopterygidae		Taeniopterygidae Capniidae	Taeniopterygidae
Swift Run	NONE		NONE	Taeniopterygidae Capniidae	NONE	NONE	NONE	NONE
Traver Creek: Broadway	Capniidae		Capniidae	Capniidae		NONE	Capniidae	Capniidae
Woodruff: Buno	NONE						Perlodidae	NONE
Woodruff: Maxfield Rd.			NONE	NONE	NONE	NONE	Perlodidae	

Glossary of Terms

Ecological Conditions --"acceptable" indicates that the quality of the site is just below what we expect for a healthy site of its characteristics (such as drainage area and stream temperature). "Good" sites are at or slightly above expectations, while poor sites are well below what is expected. A few sites qualify as exceptional due to a great diversity of insects and good physical quality.

Ecological Condition is determined by the biological and physical conditions of the site. The biological conditions include the diversity of insect families, EPT families and sensitive families. The physical conditions are determined by conductivity results and "measuring and mapping" assessments of habitat. These assessments involve examining characteristics such as the stream banks, stream widths and depths, and the types of material (such as sand and gravel) on the stream bottom. When interpreting the biological and physical conditions, we expect more diversity at a larger site or one with cooler summer stream temperatures.

Conductivity is an indication of the amount of dissolved ions (for example salt, metals) present in the water. It is determined using a meter that measures how easily an electrical current can flow through the water sample. If the average conductivity measured at a site is 800 microSiemens (uS) or less, it is considered natural for stream water. Conductivity over 800 uS is considered excessive and may indicate the presence of toxic substances. (However, many toxins, although harmful, are not measured by conductivity.) One source of elevated conductivity is development. At some of our sites with high levels of development and impervious surfaces (roads, driveways, roofs), rainwater washes chemicals, such as road salt, fertilizers and pet wastes, from the developed landscape into the creek.

EPT Families: Insects in the orders Ephemeroptera (the mayflies), Plecoptera (the stoneflies), and Trichoptera (the caddisflies) generally evolved in streams with high levels of oxygen and/or faster flowing waters. As a result, many of these insects are particularly sensitive to factors that reduce oxygen, reduce flow, increase temperature, or otherwise stress the insect.

Families: A taxonomic grouping of similar organisms, in this case insects. Taxonomy is a system for characterizing all living things. A "family" is a taxonomic level that includes similar genera which are groups of species. For example, mink, otters, and skunks belong to the family Mustelidae.

Insect Families: This indicator gives us our best overall picture of the insect community's health. Because there are about 87 insect families in the Huron, this indicator can provide a valid measure of ecological condition.

Winter Stoneflies: The winter stoneflies, which require high levels of oxygen, are active in January when the solubility of oxygen is high. At that time of year an absence of stoneflies suggests that toxic pollutants may be present in the river. The winter stoneflies allow us to see the effects of the chemicals entering the river, which is much harder to gauge in the summer. The ability to use stoneflies as an indicator of pollutants makes the winter Stonefly Search a good tool for investigating the conditions of our creeks.

Sensitive Insect Families: The number of families that have been identified in scientific studies as particularly vulnerable to organic pollution (such as fertilizers, human or animal waste) in studies by William Hilsenhoff at the University of Wisconsin. Twenty highly sensitive insect families live in the Huron River System.

A Watershed is the area of land that drains into the same waterway. Parts of seven counties in southeast Michigan drain into the Huron River and make up its watershed. The Huron, in turn, drains into Lake Erie and is part of the Great Lakes Watershed.

Please let us know how we can best work with you to protect the Huron River. We certainly want to hear about your interests and efforts. What would you like to do to help the river? What are you already doing?

Also, help us improve these reports by telling us if any parts are not clear and what you would find interesting, or other comments.

Sincerely,

Theresa Dakin & Joan Martin
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Adopt-A-Stream Calendar of Events

You *must pre-register*, call (734) 769-5971 or email jmartin@hrwc.org. (Check on the location, too)

Date	Activity	When	Where
2003			
Oct. 5	**ID Day**	Noon - 3 pm or 2 - 5 pm	NEW Center
	[Learn about the creatures collected at the RoundUp as you help to identify and count them.]		
Oct. 24	**STATE OF THE HURON**	8:30am - 4 pm	Washtenaw Community College
	[Join us for the first conference about the Huron River. Experts will lead discussions about the current issues and threats to our local environment and what needs to be done to address them.]		
Nov. 15	**RIVER WORKSHOP**	9am - 5 pm	Pittsfield Township Hall & Creeks
	[Prof. Michael Wiley will teach us to recognize the impacts of landscape changes on our streams.]		
2004			
Jan. 17	**STONEFLY SEARCH**	11:30 - 2:30 pm or 1 - 4 pm	NEW Center & Nearby Creek
	[Join a team that searches for stoneflies in creeks to learn about stream conditions in the Huron River.]		

THE HURON RIVER WATERSHED COUNCIL

Prof. Mike Wiley at the most recent River Workshop

ID Day

See the flatheaded mayfly larva left, and many other critters at ID Day.