Monitoring Gazette

Study results of HRWC's Adopt-A-Stream Program

Spring 2004

Get the Phosphorus Out

Excess phosphorus is one of the biggest water quality challenges facing the Huron River. Phosphorus is a naturally occurring element that is an important nutrient in aquatic systems. But a little goes a long way. One pound of phosphorus can stimulate the growth of 500 pounds of algae. This green muck is a real inconvenience to people who recreate in and on the Huron River and it is harmful to aquatic species. As algae and other plant material decompose, oxygen levels in the water are depleted. When oxygen levels drop below normal, fish and other creatures are left "gasping for a breath" and the entire river system is in jeopardy.

On average, 20% of the phosphorus in the Huron River comes from natural sources. Human activities account for the remaining 80%! That means you can make a real difference to water quality by paying attention to the products you use that contain phosphorus.

DISHWASHER DETERGENTS
- a surprising source of phosphorus

Thought phosphorus was banned in cleaning agents? Think again. The Michigan Cleanings Agents Act stipulates that laundry detergents may not contain more that 0.5% phosphorus by weight. For all other household cleaning agents, the limit is 8.7%. Dishwasher detergents are surprisingly high in phosphates, with an average content of 5.84% phosphorus by weight.

So, what does all this mean? **If you use a dishwasher, you may unwittingly be contributing to water pollution.** The average household uses 36 pounds of dishwasher detergent each year, releasing 2 pounds of phosphorus into groundwater supplies (via septic systems) or into wastewater treatment facilities (which have to remove the phosphorus to permitted levels, often at great expense). Remember, 2 pounds of untreated phosphorus will stimulate 1,000 pounds of algae. Multiply that by the estimated 150,000 kitchens in the watershed using dishwashers and you have a real recipe for disaster, which also means you have real potential for improvement.

20% of the phosphorus in the Huron River comes from natural sources. Human activities account for the remaining 80%!

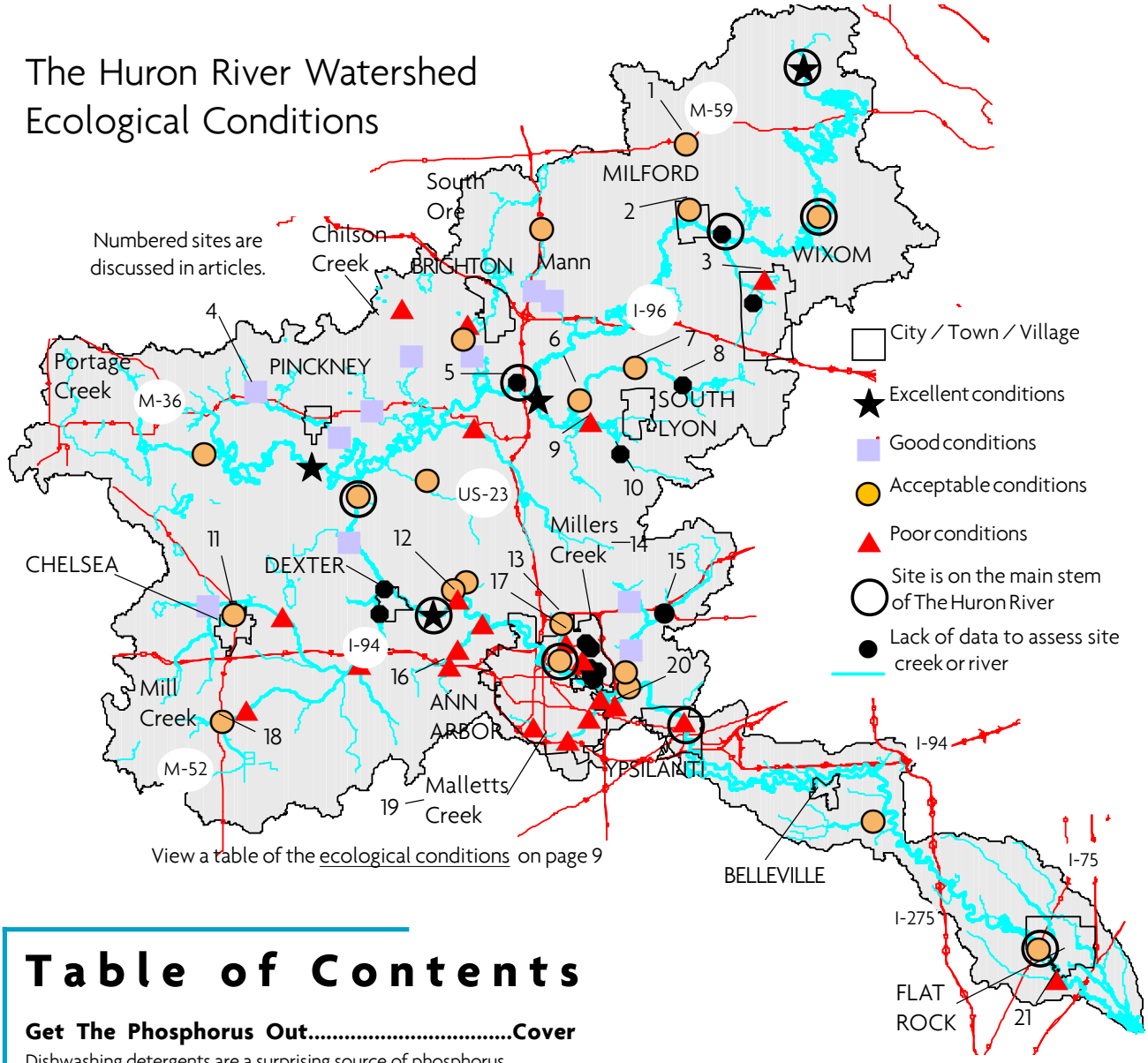
So, what's the solution? Simple. **Check the labels on the cleaning products you purchase for phosphorus levels.** Select dishwasher detergents that are low in phosphorus. Phosphorus content ranges from 0% (Seventh Generation, Wave, & others) to 8.7% (Palmolive Triple Action Tabs), the maximum allowable by law. If the package doesn't tell you the phosphorus content, be wary.

Condensed and revised from an article by the Tip of the Mitt Watershed Council

DATA MAY LEAD TO PRESERVATION!

Our monitoring data showing the high quality of Millers Creek at Green Road (#14 on map p.2) has led the City of Ann Arbor to consider purchasing land to preserve this portion of the creek!

The Huron River Watershed Ecological Conditions



View a table of the ecological conditions on page 9

Table of Contents

All past reports are available on our website at www.hrwc.org, select Reports & Publications on the right side of the screen.

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 spring 2004 were combined with 11 previous years of monitoring data to assess the quality of sites throughout the watershed (see glossary, p.13 for definitions of underlined terms).

The map on the previous page shows the location and ecological condition of our study sites. The rankings of poor, acceptable, good and excellent are determined using a model created by Prof. Michael Wiley at the University of Michigan. In general much of the watershed is in acceptable or good condition, while four areas are in excellent condition. Sites in poor condition tend to be located in downstream portions and in urban areas.

RED FLAG SITES

We have identified several sites where winter stoneflies have been repeatedly absent and conductivity is chronically high. Both characteristics are red flags, indicating a need for chemical analysis of the water.

Greenoak Creek: Rushton Road #9
Malletts Creek (all 4 sites) #19
Millers Creek at Glazier Way #14
Port Creek at Armstrong #21
Swift Run #20

NEWLY ASSESSED

We now have enough information to assess the conditions at our two study sites on Pettibone Creek near Milford as acceptable (#1, 2 see map opposite page). In both sites on Pettibone, we find good overall diversity, and normal conductivity (a general measure of water quality). However, we find a lack of insects that are particularly sensitive to pollution: sensitive families and winter stoneflies. Pettibone Creek is a series of ponds and wetlands. The Livingston Road site in the headwaters resembles other high quality study sites—it is small and winding, has a gravel and cobble stream bottom, and has obvious groundwater inputs. Yet, this site supports fewer sensitive families then other sites in the watershed. The Commerce study sites is in the village of Milford, just downstream of the Mill Pond Dam. Both sites on Pettibone are warm in the summer (reaching 80 degress Fahrenheit). Warm temperatures can limit or reduce the aquatic diversity.

Norton Creek at Loon Lake is in poor ecological condition. This site is a small lake outlet and offers much less diverse habitat than most of our study sites. Since different kinds of insects need different kinds of habitat, the limited habitat here could be a factor in the poor species diversity. Although conductivity values at this site are sometimes high, the average is within the normal range (774uS).

The headwaters of Pettibone Creek at Livingston Road offers good habitat, but hot summer temperatures may limit sensitive families.

Port Creek (#21) near Flat Rock is in poor condition. Our study site on Port Creek drains only 6 square miles of flat land, mainly agriculture with residential areas. In addition to finding low biological diversity, conductivity is chronically excessive (average 1066uS), and sensitive families and winter stoneflies are absent.

Contact Joan at jmartin@hrwc.org or 734 769-5971 if you would be interested in measuring conductivity throughout Port Creek to identify potential problem areas.

See table on pages 8 & 9 for a list of ecological conditions by site.

Port Creek supports little biological diversity and questionable water quality.

Excellent sites:

- support a rich diversity of aquatic insects

Poor sites:

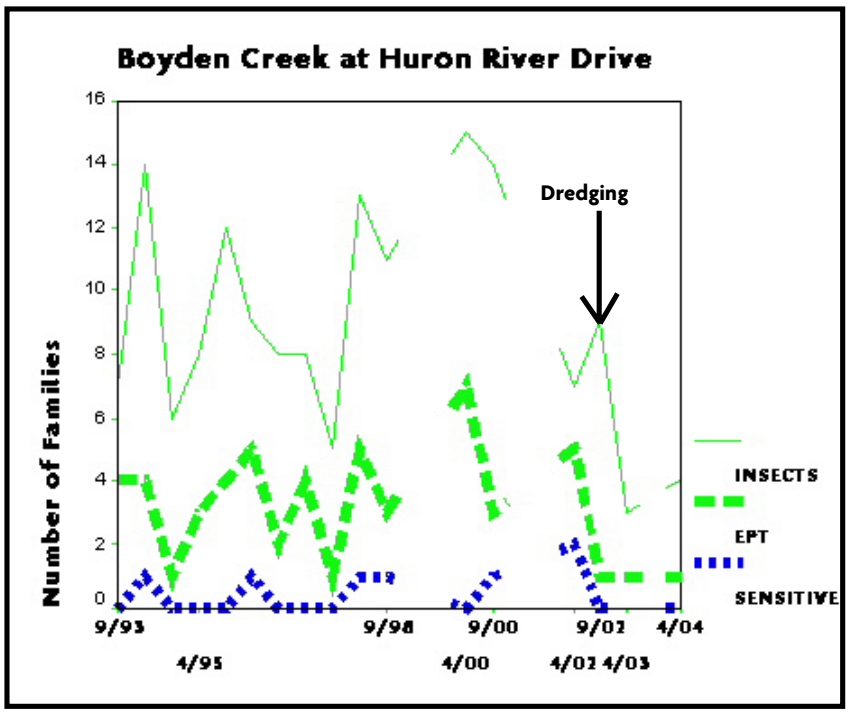
- only a few kinds of insects are found here
- habitat quality is typically poor
- water quality (as measured by conductivity) is typically poor

Highlights of Spring Results

We identify a change (increase or decline) only when there is a statistically significant trend over the entire time of monitoring. See page 8 for a table of the 2004 results and a complete listing of the population changes.

THE MUCK IS THINNING

In the Fall of 2002 a collecting team found Boyden Creek (#12 see map p.2) in an awful state from the dredging of lakes in Loch Alpine (see Fall 2002 Monitoring Report). Just before that, we had found two sensitive insects (the log-cabin caddisfly and the prong-gill mayfly) at our Huron River Drive study site. Due to several feet of muck, we did not sample the site in the Fall of 2003 after we found only one EPT, no sensitive families, and a total of 3 insect families in April of 2003 (underlined terms are defined on page 13). This Spring, Tom Jameson reported that there were some firmer areas of the creek bottom. Results were still dismal with no sensitive, 1 EPT and 4 insect families.

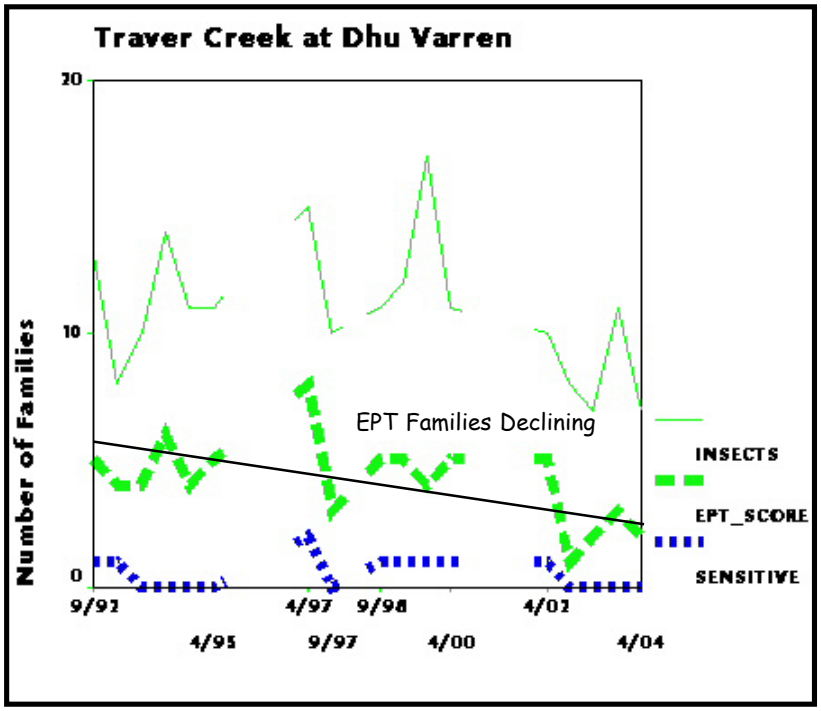


We have been unable to find sensitive families since the dredging of the Loch Alpine Lakes in the fall of 2002. Note: a break in the line indicates a period of no measurement.

TRAVER CREEK DECLINES

For the first time we were unable to find even one EPT family in Traver Creek at Broadway (#17). The results from this Spring monitoring were the worst found at this degraded site.

Upstream in Traver Creek at Dhu Varren (#13) the EPT population continues to be lower than prior to April of 2002.



EPT families continue to decline in the headwaters of Traver Creek at Dhu Varren Road.

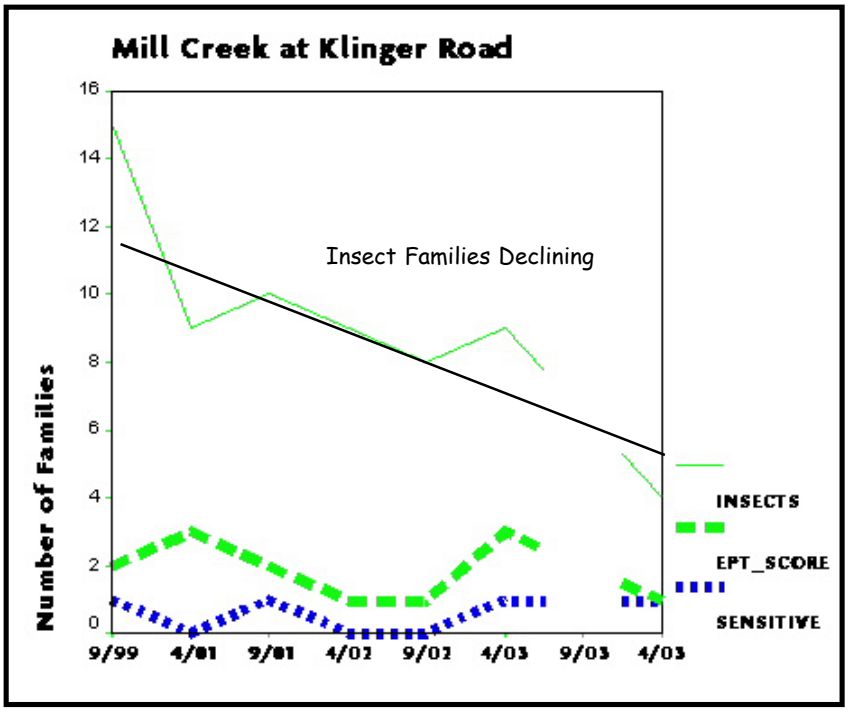
SENSITIVE FAMILIES FOUND IN DAVIS CREEK—HOORAY!

Since the fall of 2002 we have seen a decline in the sensitive insect population in Davis Creek at Doane Road (#6). This Spring the population looked good. Rusty Brach's team found two sensitive families, the clubtail dragonfly (Family Gomphidae), and the Perlodid stonefly (Perlodidae). We also found

Perlodid stonefly Painting: Emily S. Damstra

continued on next page

Highlights of Spring Results



The total number of insect families that we find in Mill Creek at Klinger Road has declined from 15 families in September of 1999 to 4 families in April of 2004.

three sensitive families in Davis Creek at Pontiac Trail (#7), another site we have been concerned about on Davis Creek (see surprising finds on the next page).

MILL CREEK DECLINES

Results this Spring indicate a declining population in the headwaters of the south branch of Mill Creek. Both EPT and sensitive families are declining in Mill Creek at Manchester (#18), and the total number of insect families is declining just downstream at our Klinger study site. In January, we did find winter stoneflies at both sites, and the April conductivity values were just above the normal range (Manchester was 805uS and Klinger was 815uS). (Underlined terms are defined on page 13.)

Being Green Isn't Always Good

THE EXPERIMENT

To get the word out about phosphorus in dishwashing detergents (see cover article), Adopt-A-Stream volunteer Nancy Stokes performed an experiment and displayed the results at the Spring River RoundUp. Nancy's experiment included three jars of river water. One jar served as a control where nothing was added. To the other two jars, Nancy added a dilute solution of dishwashing detergents—one detergent contained phosphorus and one was phosphorus-free. The three jars were placed under a full spectrum florescent light to simulate sunlight. This three jar comparison was repeated with water from four locations.

THE RESULTS

In less than three weeks, the jar containing dishwasher detergent with phosphorus was distinctively greener than the other two. (There was one exception, where the control was the greenest!) It appears that phosphorus free dishwashing detergent resulted in much less algal growth than dishwashing detergent with phosphorus.

Ordinary dishwashing detergent can cause algae blooms.

WHAT DOES THIS MEAN FOR THE RIVER?

Nancy calculated that a 50oz box of typical dishwashing detergent that contained the legal amount of phosphorus could result in 120lbs of algae in the river!

Surprising Finds!

Chad Theismann's team found a perlodid Stonefly in Traver Creek at Dhu Varren (#13 see map p.2). Although we have found this stonefly once during our April collections, this is a first for our winter collections at Dhu Varren.

Ben Upton's team was able to find the broad-back winter stonefly (Family Taeniopterygidae) that was absent last winter in the Huron River at US 23 (#5 see map p.2) in Livingston County.

Unfortunately no stoneflies could be found at Letts Creek (#11, North fork of Mill Creek) in Vets park. This site is notorious for swings in conditions, having a history of pollution.

For the first time we were unable to find stoneflies in Davis Creek at Pontiac Trail (#7). In addition, last fall we reported a declining population of sensitive families at this site (underlined terms are defined on p.13). So we were relieved in April when Noemi Barabas's team found three sensitive families: hellgrammites (Family Corydalidae), perlodid stoneflies (Family Perlodidae), and a prong-gilled mayfly (Leptophlebiidae).

Nancy Stokes' team found that the slender winter stonefly has returned to Honey Creek at Jackson Road (#16). No stoneflies were found at this site the previous winter.

Catherine Riseng's team found Nemourid stoneflies in Hummocky Lick (#4) for the first time. These stoneflies occur in small, groundwater fed streams, similar to Hummocky Lick and Millers Creek at Green Road (#14).

John Stahly finds our new site on the East Branch of Fleming Creek teeming with diversity during the Spring RoundUp. Photo: John Cramer

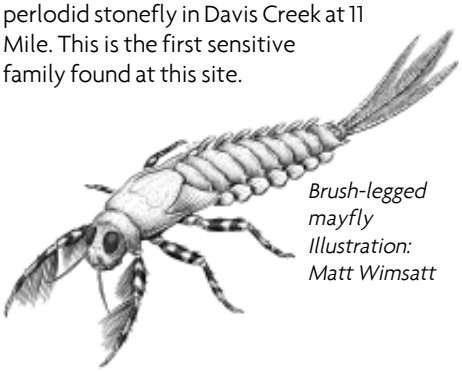
Jeanmarie Mishler and Maryn Mishler at Bug ID Day.

New Site Results

NEW SITES IN THE DAVIS CREEK SYSTEM

In January, no stoneflies were found at either of the new sites in the Davis Creek system: Walker Creek at 8 Mile (#8), and Davis Creek at 11 Mile (#10). Both sites are small and were very iced over.

This April, Joe Rathbun's team found a perlodid stonefly in Davis Creek at 11 Mile. This is the first sensitive family found at this site.



Brush-legged mayfly Illustration: Matt Wimsatt

Jane Kleiner and Carol Dubritsky's team found a sensitive brush-legged mayfly (Family Isonychiidae) in Walker Creek at 8 Mile (#10).

FLEMING CREEK

This April was our first collection in the East Branch of Fleming Creek at our Galpin site (#15). John Stahly's team found great diversity—13 insect families, 6 EPT, and 3 sensitive families.

MILLERS CREEK

Noemi Barabas's team found a sensitive log-cabin caddissfly (Family Brachicentridae) in Millers Creek at Green Road (#14). This continues to be the only site on Millers Creek where we find sensitive families.

Thank you Experts!

The success of our Bug ID Day greatly depends upon a few local experts. This Spring, several people made that day smooth and successfull: Ethan Bright, Gary Crawford, Jill Kelley, Graham Lewis, Catherine Riseng, Dawn Roush, Beth Sparks-Jackson, Nancy Stokes, and Mahya Wood.

Thank you

to all the environmental stewards who monitored in Winter and/or Spring 2004

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

Kim Alfonsi
Rowena Angeles
Alex Bajcz (L)
Noemi Barabas (C)
Michael Benham (L)
Laurel Beyer (L)
Rob Biermann
Christine Bizgu
David Blough
Rusty Brach (C)
Bill Brandon
Rochelle Breitenbach (C)
Fran Brennan-Pontoni
Ethan Bright
Mike Brooks
Sharon Brooks
Dave Brooks (C)
Steve Brownell
Lee Burton
Ray Caleca
Roberta Carr
Barb Chamness
Wayne Cheyne
Rebecca Cifaldi
Katy Cordova
Rodney Cox
Rob Cox
Gary Crawford
Jennifer Croze
Emily Damstra (C)
Kirk Davis (C)
Katie Davison
Jo Declerck
Kim Deljevic
Sean Demers (L)
Charles Dershimer
Kelly Dettmer
Margaret Doub
Carole Dubritsky (L)
Michele Eickholt (L)
Peter Esselman
Ed Fead
Dirk Fishbach
Nick Fletcher
Dave Foreman
Neal Foster (L)
Sarah Foster (L)
Cindy Foster
Julie Frost
Ron Gamble (C)
Nat Gillespie
Nathaniel Gillespie
Kathy A. Giszczak
Ann Gladwin
Kathie Gourlay
Polina Gouskova
Carolyn Grapentine
Betty Gratopp
Alan Green
Cindy Greutman
Kevin Gustavson (C)
Fred Hanert
Fay Hansen
Mona Harmon-Bowman
Kevin Hartgerink
Rob Henderson
Julia Henshaw (C)
Chad Hershock
Mark Higbee
Martha Hill
Nick Hinrichsen
Jennifer Hollenbeck
Peter Holvenstot
Bob Holvenstot
David Hopkinson
David Howell
Greta Jacobs
Tom Jameson (C)
Zane Janicki (C)
Jen Jaranilla
Tom Jenkins
Tim Jeris (C)
Janet Kahan,
Steven J. Kapeller
Jill Kelley
Nana Kikuchi
Jane Tesner Kleiner (C)
Andrea Kline
Dick Knopf
Dea Knopf
Mark Kozlowski
Rowe Lee-Mills
Mick Leiferman
Kate Levin

Perlodid stonefly Painting: Emily S. Damstra

Graham E. Lewis
John Lillie (C)
Sue Lillie (C)
Demetrius Lingoes
Vicki Loy
Fran Lyman
Richard Manczak (C)
John Martin
Dianne Martin (C)
Mary Matossian
Erin Mayernik
Mac McCauley
Trevor McCauley
Karla Metzger
John Minderhout (C)
Tui Minderhout (L)
Dan Minock
Jeanmarie Mishler (L)
Maryn Mishler (C)
Jill Money
Alison Montemurro
Lily Morishima
B J Morrison
Mike Morrissey
Suzy Morse
George Mouradian
Edie Mueller (L)
Hannah Murray
Sean Norton
Diane O'Connell (L)
Carolyn Oneill
Mart Perkins
Erica Perry
Dan Peters
Ted Peters
Larry Peterson
Eric Piehl
Robert Ponte
Karen Prochnow
Ellen Rambo
Joe Rathbun (C)
Bonnie Reardan
Lee Ren (L)
Simon Ren (C)
Bob Richards
Carrie Ricker
Chris Riggs
Joe Riley
Catherine Riseng
Stacey Lang Roberts
Bill Rodgers
Joe Rogers
Don Rottiers (C)
Rob Rougeau (C)
Dawn Roush
Esther Rubin
Larry Ruff
Morgan Sabol
David Sawicki
Kathleen K Schaffer
Candace Shelly (L)
Gerry Smith
Bob Smith (C)
Jim Smith (C)
Andrew Smith (C)
Paul Smith (C)
Beth Sparks-Jackson
Mary Spence
John Stahly (C)
Lia Stevens
Nancy Stokes (C)
Faye Stoner (L)
Joy Strawser
Dave Szczygiel
Chad Theismann
Dan Thiry (C)
Cathy Thompson
Erin Trame (L)
Lewis Tripp (L)
Carrie Turner (C)
Rebecca Turner
Ben Upton
Kari Walworth (L)
Fred Wark (C)
Mark Weiss
Carl F. Welser
Jay Williams (C)
Dave Wilson
Larry Wolicki (L)
Chris Wood
Mahya Wood
Marcia Woodburn
Mara Zimmerman

Please let us know if we missed your name.

(C) Collectors (L) Leaders

(These people take training and responsibility to ensure that the study event is reliable and educational.)

Spring 2004 Results and Population Changes

LOCATION of sites sampled in 4/04	Insect Families	EPT Families	Sensitive Families	Population Diversity	Ecological Conditions*
Arms Creek: Walsh Road	16	6	1	stable	3
Boyden Creek: Delhi	14	6	2	stable	3
Boyden Creek: Golf Course	16	9	3	stable	3
Boyden Creek: Huron R Dr	4	1	0	stable	4
Chilson Creek: Brighton	13	5	1	stable	4
Chilson Creek: Chilson R	13	7	3	stable	2
Davis Creek at 11 Mile	7	3	1	NEW	NA
Davis Creek: Doane Road	11	7	2	stable	3
Davis Creek: Pontiac Trail	17	6	3	stable	3
Fleming Creek at Galpin	13	6	3	NEW	NA
Fleming Creek: Geddes	**13**	5	1	**INC**	3
Greenoak Creek: Rushton	3	0	0	stable	4
Hay Creek	12	8	2	stable	2
Honey Creek (N): Darwin	14	7	2	stable	2
Honey Creek: Jackson	16	6	3	stable	4
Honey Creek: Wagner	9	4	1	stable	4
Horseshoe Creek:	13	6	0	stable	4
Hummocky Lick at M-36	**13**	7	2	**DEC**	2
Huron Creek: near the mouth	8	3	1	stable	2
Huron River: US-23 (Livingston County)	14	6	1	stable	NA-need temperature data
Huron River: Commerce Rd	9	5	1	stable	3
Huron River: Cross Street	9	3	0	stable	4
Huron River: Flat Rock	8	3	0	stable	3
Huron River: Zeeb Road	**27**	11	7	**INC**	1
Huron River:White Lake Rd	20	9	5	stable	1
Malletts Creek: I-94	6	1	0	stable	4
Malletts Creek: Main St.	6	2	0	stable	4
Malletts Creek: Scheffler	8	1	0	stable	4

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

*Ecological Conditions: 1=Excellent, 2=Good, 3=Acceptable, 4=Poor, NA=not available due to insufficient data to assess conditions
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 2004 Results and Population Changes

LOCATION of sites sampled in 4/04	Insect Families	EPT Families	Sensitive Families	Population Diversity	Ecological Conditions*
Mann: VanAmburg Road	14	8	4	stable	2
Mill Creek at Shield	10	4	1	NEW	NA
Mill Creek at Warrior Park	19	8	2	NEW	NA
Mill Creek: Jackson Road	9	3	0	stable	4
Mill Creek: Manchester	10	**4**	**1**	**DEC**	3
Mill Creek: Fletcher Road	8	3	1	stable	4
Mill Creek: Ivey Road	17	8	2	stable	2
Mill Creek: Klinger Road	**4**	1	1	**DEC**	4
Millers at Huron Parkway	8	2	0	NEW	NA
Millers at Meadows	7	1	0	NEW	NA
Millers Creek: Glazier	3	1	0	stable	4
Millers trib at Green Road	5	2	1	NEW	NA
Millers W. Branch at Plymouth	3	0	0	NEW	NA
Norton Creek: Loon Lake Outlet	12	3	2	stable	4
Norton Creek: West Maple	6	1	0	stable	NA-need habitat data
Pettibone Creek at Commerce	13	7	0	stable	3
Pettibone Creek at Livingston	10	6	1	stable	3
Port Creek at Armstrong	9	2	0	stable	4
Portage Creek: Unadilla	16	**7**	1	**INC**	3
Portage: Dexter-TownHall	18	9	2	stable	1
S. Branch of Huron River at Silver Lake Road	15	8	1	stable	1
South Ore Creek: Bauer	**11**	6	1	**DEC**	3
South Ore Creek: Hamburg	17	8	2	stable	2
South Ore Creek: Lake Ridge Road	8	3	0	stable	4
Traver Creek: Broadway	3	0	0	stable	4
Traver Creek: Dhu Varren	7	**2**	0	**DEC**	3
Walker Creek at 8 Mile	12	7	1	NEW	NA
Woodruff Creek: Buno Rd.	17	7	2	stable	2
Woodruff: Maxfield Rd.	17	8	2	stable	3
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					

*Ecological Conditions: 1=Excellent, 2=Good, 3=Acceptable, 4=Poor, NA=not available due to insufficient data to assess conditions
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

Recent Results of the Stonefly Search

LOCATION	2002	2003	2004
Arms Creek: Walsh Road	Capniidae Perlodidae	Capniidae	Capniidae
Boyden Creek: Delhi	Capniidae	Capniidae	
Boyden Creek: Golf Course	Perlodidae Capniidae Taeniopterygidae	Capniidae	Capniidae
Boyden Creek: Huron River Drive		NONE	NONE
Chilson Creek: Brighton Road	NONE (and None upstream of site)	NONE	
Chilson Creek: Chilson Road	Perlodidae Taeniopterygidae	Perlodidae Taeniopterygidae	Perlodidae
Chilson Creek: Golf Course	Taeniopterygidae	Capniidae Taeniopterygidae	
Davis Creek: Doane Road		Taeniopterygidae Capniidae	Taeniopterygidae Capniidae
Davis Creek: 11 Mile			NONE
Davis Creek: Pontiac Trail	Perlodidae	Perlodidae	NONE
Fleming Creek: Botanical Gardens	Taeniopterygidae Capniidae	Capniidae	Capniidae
Fleming Creek: Geddes Rd.	Capniidae	Capniidae	Capniidae
Fleming Creek: Radrick Farms		Capniidae	
Fleming Creek: Warren	Capniidae	Capniidae	
Greenoak Creek: Rushton Road	NONE (and None downstream of site)	None	
Griggs Drain	Taeniopterygidae Capniidae Perlodidae		
Hay Creek	Taeniopterygidae Capniidae		Taeniopterygidae Capniidae
Honey Creek (Liv. Co.): Darwin Rd.	Taeniopterygidae Capniidae	Capniidae	Taeniopterygidae Capniidae
Honey Creek: Jackson	Capniidae (upstream and downstream of road)	None	Capniidae
Honey Creek: Pratt	Perlodidae	Taeniopterygidae	
Honey Creek: Wagner	Taeniopterygidae		Capniidae

Recent Results of the Stonefly Search

LOCATION	2002	2003	2004
Horseshoe Creek		Taeniopterygidae	Taeniopterygidae
Hummocky Lick (Liv. Co.) at M-36	Capniidae	NONE	Capniidae Nemouridae
Huron Creek		Capniidae Taeniopterygidae	Capniidae Taeniopterygidae
Huron River at Bell Road	Taeniopterygidae	Taeniopterygidae Capniidae	Capniidae Taeniopterygidae
Huron River: Commerce Rd	Perlodidae		Perlodidae
Huron River: Cross Street	Taeniopterygidae Capniidae	Taeniopterygidae	
Huron River: Flat Rock	Taeniopterygidae Capniidae	Taeniopterygidae Capniidae	
Huron River at Island Park	Taeniopterygidae Capniidae	Taeniopterygidae Capniidae	Taeniopterygidae Capniidae
Huron River at Proud Lake Rec. Area	NONE	Taeniopterygidae	NONE
Huron River: US-23	Taeniopterygidae	NONE	Taeniopterygidae
Huron River: White Lake Road	Taeniopterygidae Perlodidae	Taeniopterygidae Perlodidae	
Huron River: Zeeb Road	Taeniopterygidae Capniidae	Taeniopterygidae Capniidae	Taeniopterygidae Capniidae
Malletts Creek: Chalmers	NONE	NONE	NONE
Malletts Creek: I-94		NONE	
Malletts Creek: Main St.	NONE	NONE	
Malletts Creek: Scheffler	NONE		NONE
Mann Creek: VanAmberg	Perlidae Taeniopterygidae	Taeniopterygidae	Taeniopterygidae
Mill Creek: Fletcher Road	Taeniopterygidae		Taeniopterygidae Capniidae
Mill Creek: Ivey Road	Perlodidae	Perlodidae	
Mill Creek: Jackson Road		Capniidae	Taeniopterygidae Capniidae
Mill Creek: Klinger Road	Taeniopterygidae Capniidae		Capniidae
Mill Creek (Letts) at Vets Park	Capniidae	Capniidae	NONE
Mill Creek: Manchester Rd	Nemouridae	NONE	Taeniopterygidae Capniidae
Mill Creek: Shield		Capniidae Taeniopterygidae	Taeniopterygidae Capniidae
Mill Creek: Warrior Park		Capniidae Taeniopterygidae	Taeniopterygidae Capniidae

Recent Results of the Stonefly Search

LOCATION	2002	2003	2004
Millers Creek: Baxter		NONE	NONE
Millers Creek: Glazier Way	Capniidae	NONE	
Millers Creek: Green		Capniidae Nemouridae	Nemouridae
Millers Creek: Hubbard		NONE	NONE
Millers Creek: Huron Parkway		NONE	NONE
Millers Creek: LakeHaven		NONE	NONE
Millers Creek: Meadows		NONE	NONE
Millers Creek: Plymouth Road		NONE	NONE
Norton Creek: West Maple Road	NONE	NONE	NONE
Norton Creek: Loon Lake Outlet	NONE	NONE	NONE
Pettibone Creek: Commerce	NONE	NONE	NONE
Pettibone Creek: Livingston Rd.	NONE	NONE	NONE
Port Creek at Armstrong Rd.	NONE	NONE	
Portage: Dexter-TownHall Rd	Taeniopterygidae Perlidae Capniidae	Taeniopterygidae	Taeniopterygidae Perlodidae Capniidae
Portage Creek: Unadilla	NONE	NONE	
S.Br.Huron River: Silver Lake	Perlidae Taeniopterygidae		Perlidae Taeniopterygidae
South Ore Creek: Bauer Rd	Taeniopterygidae Perlodidae	Taeniopterygidae	
South Ore Creek: Lake Ridge	NONE	NONE	
South Ore Creek: Hamburg	Taeniopterygidae Capniidae	Taeniopterygidae	
Swift Run	NONE	NONE	NONE
Traver Creek: Dhu Varren		Capniidae	Capniidae Perlodidae
Traver Creek: Broadway	Capniidae	Capniidae	
Walker Creek: 8 Mile			NONE
Woodruff: Buno	Perlodidae	NONE	Capniidae
Woodruff: Maxfield Rd.	Perlodidae		NONE

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 excellent 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 per centimeter (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
tdakin@hrwc.org jmartin@hrwc.org
(734) 769 - 5971

Calendar of Events

Huron River Watershed Council
Protecting the river since 1965
1100 N. Main Street Suite 210
Ann Arbor, MI 48104
(734) 769-5123
www.hrwc.org

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

Date	Activity	When	Where
July 17	**MEASURING & MAPPING TRAINING** Learn how to "read a stream" while you assess and record the physical conditions.	2-5 PM	NEW Center
Aug. 28	**LEADERSHIP TRAINING** Learn to lead the team in the River RoundUp as either the collector or the educator. You need to have experienced a RoundUp.	12-1 PM Educators, 12-5 PM Collectors	NEW Center & Nearby Creeks
Sep. 11	**RIVER ROUNDUP** Join a team and search in creeks or the River for creatures (macroinvertebrates) to learn about the River conditions. (View results at www.hrwc.org)	9 AM-3:30 PM or 10:30 AM-5 PM	Entire Watershed
Sep. 26	**ID DAY** Learn about creatures collected at the RoundUp as you help to identify and count them.	Noon-3 PM or 2 -5 PM	NEW Center

Left: Bug ID Day

Right: River RoundUp

Photo: Marc Akemann Photography

Photo: Edie Mueller