

Report on Fish Surveys by Friends of the Rouge, 2017-18  
for the Alliance of Rouge Communities

Financial assistance provided by the Michigan Areas of Concern Program, Office of the Great Lakes, Department of Natural Resources, Environmental Protection Agency

\*The statements, findings, conclusions, and recommendation in this report are those of the Friends of the Rouge and do not necessarily reflect the views of the Michigan Department of Natural Resources and the Environmental Protection Agency

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## **Introduction**

Friends of the Rouge (FOTR) was funded by the Michigan Areas of Concern Program, Office of the Great Lakes (OGL), Department of Environmental Quality (DEQ), Environmental Protection Agency through the Alliance of Rouge Communities, to sample 35 sites on the Rouge River in 2017-18 for fish using seine and dip nets. In December 2017, the Michigan OGL was moved from the DEQ to the Department of Natural Resources (DNR).

## **Materials and Methods**

FOTR submitted a Quality Assurance Project Plan, which was approved by the DEQ in August 2017. FOTR developed a list of sites and dates which was submitted to Larissa Sano and Jennifer Tewkesbury.

At each site, 300 feet of stream were sampled using seine and dip nets to sample all available habitats for approximately one hour and at least 20 seine hauls. All fish were identified to species, measured to the nearest half centimeter and released back to the stream. Invasive species were disposed of. Fish with uncertain identification were taken live by Robert Muller, photographed, preserved, and sent to UM Professor Dr. Gerald Smith for identification if still uncertain. Water temperature, number of seine hauls, and fish sizes by species were recorded. Equipment was cleaned and dried at the end of each day and disinfected before moving to another tributary system. Within a given day, sites were sampled within the same tributary system or all equipment was disinfected with a bleach solution between sites.

Following each sampling day, field data was entered into Excel spreadsheets. FOTR checked the raw data against the spreadsheets and entered all into one database.

## **Sites**

There were 36 samplings on 21 sampling days (Table 1, map 1). Sites were chosen to fill in gaps in existing data, investigate rare species and continue to track the round goby and its effect on the fish community. Two lakes were surveyed: Curtis Lakes and Upper Long Lakes. The Greenfield Village Oxbow was surveyed in two locations. To investigate the rare northern redbelly dace, a headwater stream on Fowler Creek (Fowl6) was sampled in the spring. To investigate the hornyhead chub only found in the Main Rouge near Long Lake Road, upstream and downstream sites were sampled. The endangered redbelly dace was searched for in Seeley Creek, the Upper Rouge and Johnson Creek and the brown trout was searched for in Johnson Creek. A site on Nine Mile was sampled to look for sensitive species like the stonecat. For the round goby study, the Lower was sampled at 12 sites in 2017 and 6 in 2018. In addition, the Middle Rouge at the confluence with the Main was sampled for the round goby moving downstream on the Main. On the Main branch, the upstream Rouge Park and Eliza Howell Park were checked for round goby as well as the effect of the uncontrolled CSOs along the Main branch from Seven Mile Road downstream. Evans Creek was investigated to examine the extent of the degraded fish community. While there were different reasons for including each site, all listed sites were completely sampled with the exception of three Lower tributaries that were only checked for northern redbelly dace in spring 2018.

## Results

Forty-six fish species were identified, forty of which are native (Table 2). One new species was found in Upper Long Lake that is a state endangered species last found in the Rouge in 1906: pugnose shiner (*Notropis anogenus*). Another new species was found in the Lower at LR-11A (Ford Field), threespine stickleback (*Gasterosteus aculeatus*), native to the Atlantic, Pacific and Lake Ontario.

### Lakes

Two lakes were sampled in September 2017: Curtis Lake and Upper Long Lake. Curtis Lake is in Northville near Eight Mile Road and is the only natural lake in Wayne County. Upper Long Lake is in Bloomfield Township near Middlebelt and Square Lake Roads and is part of a chain of lakes called the Forest Lakes Outflow.

In Curtis Lake, six species and 368 fish were found (p. 18). Four of the species were in the sunfish family (Centrarchidae), including green sunfish, pumpkinseed, bluegill and largemouth bass. The other two species were darters: Iowa and least darters. Both of these darters are sensitive, spawn on aquatic plants and are rare in the Rouge River system. It was surprising that not a single minnow was found.

In Upper Long Lake (p. 18), fifteen species and 399 fish were found. Upper Long Lake is much larger than Curtis Lake and is connected to Hammond, Lower Long, Turtle and Forest Lakes rather than being isolated like Curtis Lake. The lake association monitors the lake and controls invasive plants including phragmites very successfully. In addition, there are intact wetlands within the lake. All species found at Curtis Lake were also found in Upper Long Lake. Additionally, there were smallmouth bass, yellow perch, northern pike, central mudminnow and yellow bullhead. Unlike Curtis Lake, there were minnows including four types: bluntnose minnows, blackchin shiners, blacknose shiners and pugnose shiners. The pugnose shiner is a Michigan endangered species last found in the Rouge in Walnut Lake in 1906. It is one of the rarest minnows in the Great Lakes Watershed. It is intolerant to turbidity and prefers vegetated low gradient streams and lakes.

### Greenfield Village Oxbow

The oxbow along the Main Rouge on the concrete channel downstream of Michigan Avenue was sampled in September 2017 (p. 19). The oxbow is not fully connected so the two sides were sampled separately. The connected side (Main12) had 17 species and 372 fish while the unconnected side (Main12N) had eight species and 115 fish. Fewer species, fewer fish and more tolerant species (carp, fathead minnows) were found on the unconnected side. The connected side had a large pike (16 ") as well as northern logperch, yellow perch, four shiner species, brook silversides and yellow bullhead. Fish may be using the oxbow as a refuge from the concrete channel.

### Northern redbelly dace (*Phoxinus eos*)

Northern redbelly dace require cold quiet streams or lakes with minimal large piscivorous fish and are therefore rare in the Rouge except the extreme headwaters of the cleaner streams. In the Lake Erie watershed, they are confined to three watersheds: Clinton, Huron and Rouge. The 1998 Rouge River

Assessment map shows them in just two tributaries - the Johnson Creek in the Middle Rouge and Fowler Creek in the Lower Rouge. In 2016, we found a third population in Pebble Creek, a Main branch tributary.

Found in large numbers in the spring but rarely in the fall, in April 2018 we went upstream to try to find how far they traveled into the uppermost tributaries of the Lower Rouge. We confirmed them in a small stream near Cherry Hill and Prospect (Fowl6. p. 20) but no further upstream on any other Fowler Creek or Lower branch tributary. We confirmed them first at Fowl1. Additionally, we checked a site in Weatherbee Woods near Warren at the start of the Lower Rouge as well as a site near the Ford Farm and found none at either location. The stream at Weatherbee Woods is the extreme headwaters of the Lower branch and is intermittent. The stream near the Ford Farm had very few fish of any species.

#### Hornyhead Chub (*Nocomis biguttatus*)

Hornyhead chub are a nest building minnow that require clean gravel. In the 1998 Assessment, they were found in two small segments on the Middle and the Main branches. While we did not find them in the Middle branch, we found them on the Main Rouge near Long Lake Road (Main13 p. 24) in the same area of the 1998 Assessment. In June 2018 we surveyed upstream and downstream of this site (Main18 p. 24) to discern their range. While hornyheads were found at the original site along with many large nests, none were found upstream or downstream. Dams located at either end: one north of Long Lake Road and one at Beach Road may be keeping them in place and possibly protecting them.

#### Redside Dace (*Clinostomus elongates*) and brown trout (*Salmo trutta*)

The redside dace, a state endangered minnow, was found in Johnson Creek and two tributaries to the Upper (Minnow Pond and Seeley Creeks) as well as downstream in the 1998 Assessment. Our 2012 surveys found it at one site in the Johnson Creek (John2), Minnow Pond (Min2), Seeley Creek (See3) and downstream on the Upper at Heritage Park (Up1). In the spring of 2018, we checked Johnson Creek (p. 27) Seeley Creek and Heritage Park (p. 25) and found none. Brown trout, which were stocked in Johnson Creek until recently, were also not found.

#### Blackchin Shiner (*Notropis heterodon*)

A site on the Main branch at Nine Mile Road (Main19 p. 26) was checked for sensitive species like stonecat and rock bass that are found upstream at Civic Center Drive. Rock bass were found but no stonecat. An unusual find were blackchin shiners, a fish previously only found in Morris Lake and the Quarton branch. These fish cannot tolerate turbidity so it was surprising to find them at this site.

#### Round Goby (*Neogobius melanostomus*)

The round goby, an aggressive benthic fish native to the Black and Caspian Seas was found in the Rouge at the base of the Henry Ford Estate Dam in 2011 by Robert Muller and Philip Kukulski who were conducting surveys for the Environmental Interpretive Center. The following fall it was confirmed in the Lower Branch as far upstream as Inkster Road. The dam at Wayne Road was removed in 2012 and we have been tracking the round goby movement upstream and its impact on the fish community. By July

2017, the goby reached Beck Road on both the main Lower Branch (Low9) and Fowler Creek (Fowl2). Johnny darter numbers declined precipitously at sites as they were invaded by round goby.

We continued to track the fish community at 12 sites along the Lower in 2017 (p. 11-15) and six sites in 2018 (p. 21-23). Johnny darter numbers continue to drop as sites are colonized by round goby. No gobies were found upstream of Beck Road. Further upstream, a bridge impairs their movement under low water conditions but is passable in high flow.

In September 2017, we discovered that the Ypsilanti Wastewater Treatment Plant temporarily stopped the outflow at Beck Road from Sept. 5, 2017 to January 8, 2018. Water levels dropped, stranding fish in pools and causing dissolved oxygen levels to drop.

In addition to the Lower Rouge, the round goby was also found in the Middle Rouge near Nankin Mills. Because none were initially found downstream and there are several impoundments upstream that are used for fishing, bait bucket release is the likely source. Finding the first goby in 2014, we tracked goby movement downstream to the confluence with the Main Rouge then upstream on the Main. In September 2017, we found them as far upstream on the Main as Rouge Park (p. 17) north of Warren but not in Eliza Howell Park (p. 16) at Fenkell (Five Mile Rd).

New Species: Threespine stickleback (*Gasterosteus aculeatus*)

On May 29, 2018, an unusual stickleback was found at Ford Field (LR-11A). Like all sticklebacks, this one had a tapered body with a thin caudal peduncle (narrow part where tail attaches) and fan-shaped tail but rather than the usual five dorsal spines on the common brook stickleback, this had three spines. Bob took the fish home for photographs and, with the assistance of Dr. Gerald Smith, identified it as a threespine stickleback native to the Atlantic and Pacific as well as Lake Ontario. These fish were first documented in Lake Huron in 1982. There are two forms: anadromous and strictly freshwater, thought to have evolved from anadromous ones trapped in lakes. Surprisingly, the one we found had armored plates on the side, indicating the anadromous type. Its origin (ballast water or bait bucket release) is unknown as well as its impact on other fish, especially the native brook stickleback.

#### Degraded Areas

Evans Creek in Southfield has had very few benthic macroinvertebrates or fish in past surveys. We sampled an additional site at Nine Mile Road in June 2018 (p. 26) and found five tolerant species with 112 total fish.

The Main Branch between Eight Mile Road and the confluence with the Middle has had a low number of fish and species. Combined Sewer Overflows are still uncontrolled in this area. We sampled at Eliza Howell Park (MN-2 p. 16), and Rouge Park at a new site (MN-7A p. 17). Eliza Howell had 5 tolerant species and 143 fish. Rouge Park had 9 species and 260 fish including yellow bullhead. Above any uncontrolled CSOs at MN-5 (p. 16) there were 13 species including the sensitive rock bass as well as largemouth bass, blackside darter and black crappie.

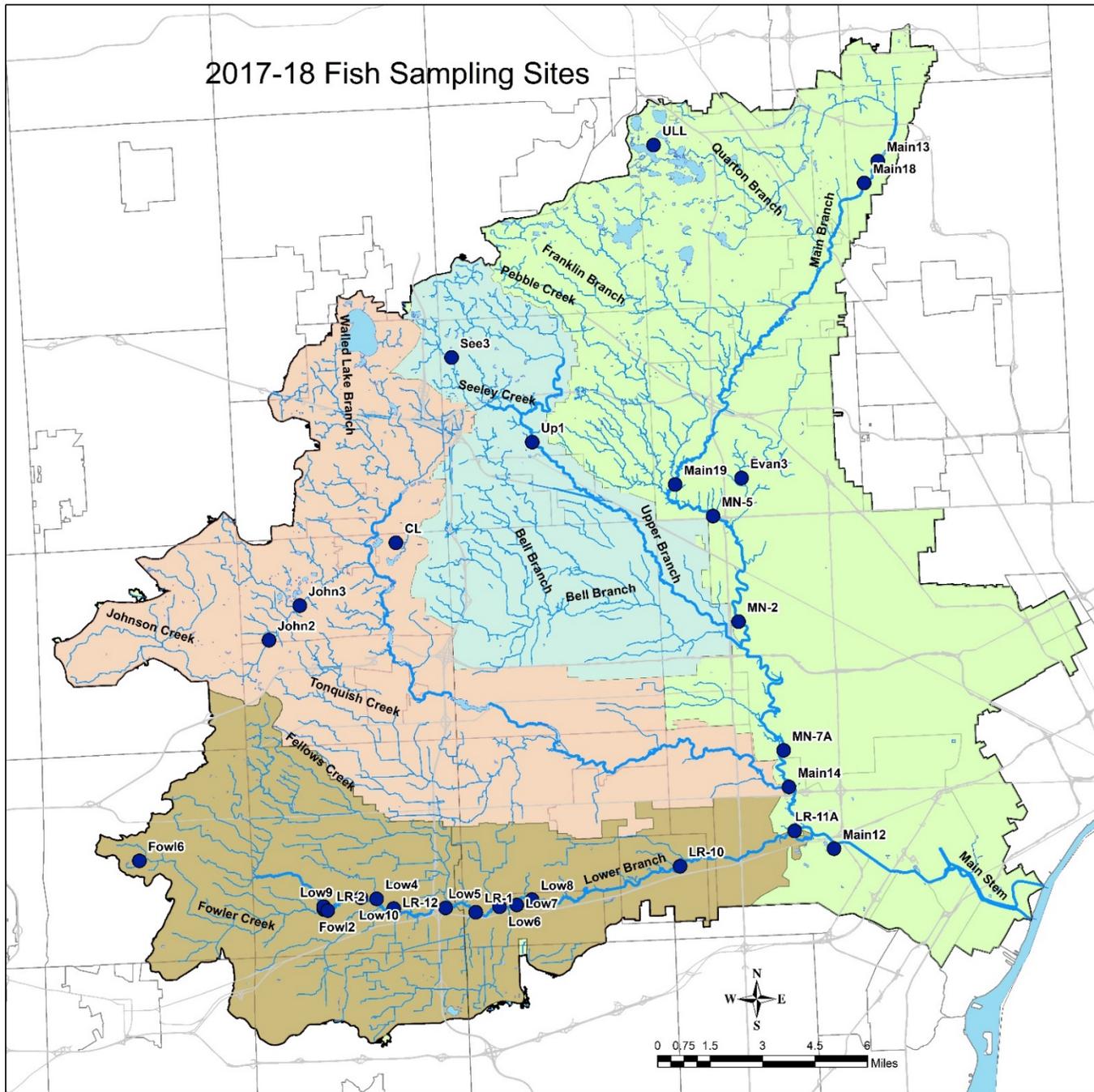
## Appendix

**Table 1: 2017-18 Fish Sampling**

Branch	FIELDID	Stream Name	Site Description	Latitude	Longitude	Date Sampled	Water Temp, C	Number of Seine Hauls	Number of species	Total Number of fish
Lower	Low10	Lower Rouge	Canton Center	42.286955	-83.484475	8/11/17	24	21	11	82
Lower	LR-2	Lower Rouge	WTUA	42.281766	-83.502997	8/11/17	24	20	13	208
Lower	Low4	Lower Rouge	Sheldon Rd	42.286433	-83.47563	8/12/17	21	26	12	97
Lower	LR-12	Lower Rouge	Morton Taylor	42.282317	-83.466103	8/12/17	21	30	12	172
Lower	Low5	Lower Rouge	Lotz Rd	42.282389	-83.437141	8/25/17	18	24	12	141
Lower	LR-1	Lower Rouge	Commerce Ct	42.280425	-83.42027	8/25/17	18	21	15	119
Lower	Low6	Lower Rouge	Newburgh Rd	42.282611	-83.407008	9/8/17	16	25	11	221
Lower	Low7	Lower Rouge	RR Tracks	42.283278	-83.397352	9/8/17	16	26	15	221
Lower	Low8	Lower Rouge	Elizabeth St	42.285374	-83.388726	9/9/17	15	22	14	158
Lower	LR-10	Lower Rouge	Inkster	42.298506	-83.305839	9/9/17	14	30	14	237
Lower	LR-11A	Lower Rouge	Ford Field east	42.312568	-83.241523	9/9/17	15	17	13	614
Main	MN-2	Main Rouge	Eliza Howell	42.399722	-83.271389	9/14/17	15	23	5	143
Main	MN-5	Main Rouge	Bridge St	42.443614	-83.284906	9/14/17	17	24	13	157
Main	Main14	Main Rouge	Middle confluence	42.33082	-83.24434	9/15/17	17	24	6	219
Main	MN-7A	Main Rouge	Rouge Park Sorenson	42.346016	-83.247099	9/15/17	17	20	9	260
Middle	CL	Curtis Lake	Silver Spring Drive	42.434131	-83.462669	9/22/17	29	16	6	368
Main	ULL	Upper Long La	Long Pointe Drive	42.597873	-83.315586	9/23/17	25	22	15	399
Main	Main12	Main Rouge	Greenfield Village	42.304944	-83.219585	9/29/17	19	10	17	372
Main	Main12N	Main Rouge	Oxbow North	42.30589	-83.221978	9/29/17	19	10	8	115
Fowler	Fowl6	Fowler Creek	Ellsworth	42.303202	-83.608035	4/30/18			5	68
Lower	Fowl2	Fowler Creek	Fowler Beck	42.28226	-83.50515	5/5/18	15	21	6	115
Lower	Low9	Lower Rouge	Lower Beck Rd	42.283461	-83.505311	5/5/18	16	21	8	116
Lower	Low4	Lower Rouge	Sheldon Rd	42.286433	-83.47563	5/11/18	13	20	8	26
Lower	LR-2	Lower Rouge	WTUA	42.281766	-83.502997	5/11/18	13	21	7	86
Lower	Low5	Lower Rouge	Lotz Rd	42.282389	-83.437141	5/25/18	18	20	10	73
Lower	Low7	Lower Rouge	RR Tracks	42.283278	-83.397352	5/25/18	18	20	9	97
Lower	LR-10	Lower Rouge	Inkster	42.298506	-83.305839	5/29/18	22	25	14	103
Lower	LR-11A	Lower Rouge	Ford Field east	42.312568	-83.241523	5/29/18	22	22	12	232
Main	Main13	Main Rouge	W Long Lake	42.59005	-83.18976	6/1/18	24	28	12	366
Main	Main18	Main Rouge	Beach Rd	42.581007	-83.197579	6/1/18	24.5	21	10	166
Upper	See3	Seeley Creek	Kennedy Ct	42.51073	-83.4304	6/14/18	18	17	10	112
Upper	Up1	Upper Rouge	Heritage Park	42.47526	-83.38567	6/14/18	19	31	10	172
Main	Evan3	Evans Creek	Latter Day Saints	42.459278	-83.268639	6/22/18	18		5	112
Main	Main19	Main Rouge	Nine Mile	42.456957	-83.305917	6/22/18	24	28	13	125
Middle	John2	Johnson Creek	5M NV	42.39424	-83.534404	6/26/18	16	20	14	154
Middle	John3	Johnson Creek	6M NV	42.40844	-83.51693	6/26/18	16	30	10	70
								<b>Total Number of Fish</b>		<b>6496</b>

Order	Family	Common Name	Genus	Species	Non-native
Atheriniformes	Atherinopsidae	Brook silverside	<i>Labidesthes</i>	<i>sicculus</i>	
Clupeiformes	Clupeidae	Gizzard shad	<i>Dorosoma</i>	<i>cepedianum</i>	
Cypriniformes	Catostomidae	Northern hog sucker	<i>Hypentelium</i>	<i>nigricans</i>	
Cypriniformes	Catostomidae	White sucker	<i>Catostomus</i>	<i>commersonii</i>	
Cypriniformes	Cyprinidae	Blackchin shiner	<i>Notropis</i>	<i>heterodon</i>	
Cypriniformes	Cyprinidae	Blacknose dace	<i>Rhinichthys</i>	<i>obtusus</i>	
Cypriniformes	Cyprinidae	Blacknose shiner	<i>Notropis</i>	<i>heterolepis</i>	
Cypriniformes	Cyprinidae	Bluntnose minnow	<i>Pimephales</i>	<i>notatus</i>	
Cypriniformes	Cyprinidae	Central stoneroller	<i>Campostoma</i>	<i>anomalum</i>	
Cypriniformes	Cyprinidae	Common carp	<i>Cyprinus</i>	<i>carpio</i>	x
Cypriniformes	Cyprinidae	Common shiner	<i>Luxilus</i>	<i>cornutus</i>	
Cypriniformes	Cyprinidae	Creek chub	<i>Semotilus</i>	<i>atromaculatus</i>	
Cypriniformes	Cyprinidae	Emerald shiner	<i>Notropis</i>	<i>atherinoides</i>	
Cypriniformes	Cyprinidae	Fathead minnow	<i>Pimephales</i>	<i>promelas</i>	
Cypriniformes	Cyprinidae	Golden shiner	<i>Notemigonus</i>	<i>crysoleucas</i>	
Cypriniformes	Cyprinidae	Hornyhead chub	<i>Nocomis</i>	<i>biguttatus</i>	
Cypriniformes	Cyprinidae	Mimic shiner	<i>Notropis</i>	<i>volucellus</i>	
Cypriniformes	Cyprinidae	Northern redbelly dace	<i>Phoximus</i>	<i>eos</i>	
Cypriniformes	Cyprinidae	Pugnose shiner	<i>Notropis</i>	<i>anogenus</i>	
Cypriniformes	Cyprinidae	Spotfin shiner	<i>Cyprinella</i>	<i>spiloptera</i>	
Cyprinodontiformes	Poeciliidae	Mosquito fish	<i>Gambusia</i>	<i>affinis</i>	x
Esociformes	Esocidae	Northern pike	<i>Esox</i>	<i>lucius</i>	
Esociformes	Umbidae	Central mudminnow	<i>Umbra</i>	<i>limi</i>	
Gasterosteiformes	Gasterosteidae	Brook stickleback	<i>Culaea</i>	<i>inconstans</i>	
Gasterosteiformes	Gasterosteidae	Threespine stickleback	<i>Gasterosteus</i>	<i>aculeatus</i>	x
Perciformes	Centrarchidae	Black crappie	<i>Pomoxis</i>	<i>nigromaculatus</i>	
Perciformes	Centrarchidae	Bluegill	<i>Lepomis</i>	<i>macrochirus</i>	
Perciformes	Centrarchidae	Green sunfish	<i>Lepomis</i>	<i>cyanelus</i>	
Perciformes	Centrarchidae	Largemouth bass	<i>Micropterus</i>	<i>salmoides</i>	
Perciformes	Centrarchidae	Pumpkinseed	<i>Lepomis</i>	<i>gibbosus</i>	
Perciformes	Centrarchidae	Rock bass	<i>Ambloplites</i>	<i>rupestris</i>	
Perciformes	Centrarchidae	Smallmouth bass	<i>Micropterus</i>	<i>dolomieu</i>	
Perciformes	Centrarchidae	Sunfish hybrid	<i>Lepomis</i>		
Perciformes	Gobiidae	Round goby	<i>Neogobius</i>	<i>melanostomus</i>	x
Perciformes	Percidae	Blackside darter	<i>Percina</i>	<i>maculata</i>	
Perciformes	Percidae	Iowa darter	<i>Etheostoma</i>	<i>exile</i>	
Perciformes	Percidae	Johnny darter	<i>Etheostoma</i>	<i>nigrum</i>	
Perciformes	Percidae	Least darter	<i>Etheostoma</i>	<i>microperca</i>	
Perciformes	Percidae	Northern logperch	<i>Percina</i>	<i>caprodes</i>	
Perciformes	Percidae	Rainbow darter	<i>Etheostoma</i>	<i>caeruleum</i>	
Perciformes	Percidae	Yellow perch	<i>Perca</i>	<i>flavescens</i>	
Salmoniformes	Salmonidae	Rainbow trout	<i>Oncorhynchus</i>	<i>mykiss</i>	x
Scorpaeniformes	Cottidae	Mottled sculpin	<i>Cottus</i>	<i>bairdii</i>	
Siluriformes	Ictaluridae	Stonecat	<i>Noturus</i>	<i>flavus</i>	
Siluriformes	Ictaluridae	Yellow bullhead	<i>Ameiurus</i>	<i>natalis</i>	

# 2017-18 Fish Sampling Sites



2017 Sites

LR-2 Outflow Aug. 11, 2017 Lower Rouge																												Total Number of Fish		
Temp. 24° C.	20 Seine Hauls																													
Species	Size Class cm																													
	≤3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	~	20	22		
Central Stoneroller				1	1																								2	
Common Shiner					24	9	4	1																					38	
Emerald Shiner				4	7	2																							13	
Fathead Minnow		1	1	3	5	2	2																						14	
Creek Chub		1			6	3	2				1																		13	
White Sucker				1	1	1	3	3	1																			3	1	14
Green Sunfish								1																					1	
Bluegill				1	2				2						1	1		2	2		1	1							13	
Largemouth Bass						1																							1	
Johnny Darter	2	3	13	2	1	4	12	1																					38	
Yellow Perch															2	1		2	2		1	1							9	
Central Logperch																	2												2	
Round Goby	4	4	6	7	5	1		4	3	1	8	1	1	1	3			1											50	
<b>Total Fishes Sampled</b>																											<b>208</b>			

Low10 Canton Center Rd. Aug. 11, 2017 Lower Rouge																												Total Number of Fish			
Temp. 24° C.	21 Seine Hauls																														
Species	Size Class cm																														
	≤3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	~	17	18	20	22	
Fathead Minnow						1	3																						4		
Creek Chub				1																			1				1	2		5	
White Sucker						1	2	1	1		1				1				1						1		2	1	4	1	17
Green Sunfish									1	1									1											3	
Pumpkinseed										1																				1	
Bluegill		1				1								1	1															4	
Hybrid Sunfish																									1		1	1		3	
Largemouth Bass							1			1																				2	
Johnny Darter		1		2				1																						4	
Yellow Perch																	1		2				1							4	
Round Goby		2	6	2			2	2	5	6	3	3	2		1	1														35	
<b>Total Fishes Sampled</b>																											<b>82</b>				

Low4 Sheldon Rd. Aug. 12, 2017 Lower Rouge																												Total Number of Fish				
Temp. 21° C.	26 Seine Hauls																															
Species	Size Class cm																															
	≤3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	~	17	18	20	22		
Central Stoneroller														1			1														2	
Common Shiner																	2															2
Fathead Minnow						1																									1	
Blacknose Dace					3				2	2																					7	
Creek Chub				2	1							1	2			2				1											9	
White Sucker					1	1		2	1						1						1										7	
Green Sunfish											1					1															2	
Pumpkinseed																1			1												2	
Bluegill	1						1																								2	
Largemouth Bass														1																	1	
Johnny Darter			1	4	2		3	1																							11	
Round Goby	10	7	5		1	1	3	3	9	7	1	1	2		1															51		
<b>Total Fishes Sampled</b>																											<b>97</b>					

LR-12 Morton-Taylor Aug. 12, 2017 Lower Rouge																													Total Number of Fish		
Temp. 21° C.	30 Seine Hauls ~ 1 Hour																														
Species	Size Class cm																														
	≤3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	~	16	18	48		
Common Carp																														1	1
Common Shiner			1		1		1								1																4
Emerald Shiner					2																										2
Fathead Minnow			5	1	3	2	4	4	2																						21
Blacknose Dace						1																									1
Creek Chub			1		2		1																								4
White Sucker							3	3	1											2	1	1		2				1	1	15	
Rainbow Trout															1																1
Green Sunfish								1	1																						2
Johnny Darter				1			6	5																							12
Blackside Darter											1																				1
Round Goby	21	23	13	7	2	1	9	8	6	6	7	2	2	1																108	
<b>Total Fishes Sampled</b>																											<b>172</b>				

Low5 Lotz Rd. August 25, 2017 Lower Rouge																											Total Number of Fish		
Temp. 18° C.	24 Seine Hauls																												
Species	Size Class cm																												
	≤3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	~	16		
Central Stoneroller					1	1			1																				3
Common Shiner											1						1		1	1	2								6
Fathead Minnow			1	1	6	2		1																					11
Blacknose Dace	1			1	2																								4
Creek Chub			1	1	3	3	2	2			1	1	1	1	2	1	1			1									21
White Sucker						1	6	1	3	2																			13
Green Sunfish						1	2	2			1																		6
Bluegill	1																												1
Johnny Darter			1	5	3	4	5																						18
Yellow Perch																											1		1
Blackside Darter											1	1	1																3
Round Goby	19	2	7	1	1		9	6	5	2	2																		54
<b>Total Fishes Sampled</b>																										<b>141</b>			

Low6 Newburgh Rd. September 8, 2017 Lower Rouge																													Total Number of Fish						
Temp. 16° C.	25 Seine Hauls																																		
Species	Size Class cm																																		
	≤3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	~	16	17	19	20	21	30			
Gizzard Shad																												1	1					2	
Common Carp																																	1		1
Common Shiner																	1			1			1											3	
Fathead Minnow			1		3	3	6	1	1																										15
Creek Chub						1				1			2	2	4			2					2				1							15	
White Sucker							4	1	5	2		2					2				1		1							1	1	1		21	
Green Sunfish		2	1							2								1																	6
Bluegill	4	3	1																															8	
Johnny Darter			1	1	6	3	2																												13
Blackside Darter											1																								1
Round Goby	14	23	25	11	5	3	13	9	20	6	6	1																							136
<b>Total Fishes Sampled</b>																												<b>221</b>							

Low7 RR Tracks September 8, 2017 Lower Rouge																											Total Number of Fish	
Temp. 16° C.	26 Seine Hauls																											
Species	Size Class cm																											
	≤3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	~	17	
Central Stoneroller											1				1													2
Common Shiner				1		3	2										1	1							1			9
Blacknose Shiner					1																							1
Mimic Shiner					1																							1
Blacknose Dace								1	4	1	1																	7
Fathead Minnow		2	7	10	14	5	8		1																			47
Creek Chub				5	5	4	5		1		1		1		1	2	1					1						27
White Sucker							4	1	2																		1	8
Green Sunfish	1	1																										2
Bluegill	2	2																										4
Largemouth Bass											1																	1
Yellow Perch																			1									1
Northern Logperch																1				1								2
Blackside Darter											1																	1
Round Goby	24	11	10	7	3	6	17	7	12	3	4	2	1			1												108
<b>Total Fishes Sampled</b>																										<b>221</b>		

Low8 Elizabeth St. September 9, 2017 Lower Rouge																												Total Number of Fish		
Temp. 15° C.	22 Seine Hauls																													
Species	Size Class cm																													
	≤3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	~	18	20	23	
Central Stoneroller										1																				1
Common Shiner			1			1	1																							3
Fathead Minnow			3	5	2	3		2		1																				16
Blacknose Dace			1																											1
Creek Chub			1		3	1	2	2	1		1	1	2		2	1			1	1									19	
White Sucker						1	4	4	5	2	2	1							1		1						1	1	1	24
Green Sunfish											1																			1
Pumpkinseed							1																							1
Bluegill	1																1													2
Largemouth Bass																			1											1
Johnny Darter							1																							1
Northern Logperch																			1			1								2
Blackside Darter							1				1											1								2
Round Goby	16	14	3	1	2	3	13	14	9	6	6	5	2																	94
<b>Total Fishes Sampled</b>																											<b>168</b>			

LR-10 Inkster Rd. September 9, 2017 Lower Rouge																									Total Number of Fish		
Temp. 14° C.	30 Seine Hauls																										
Species	Size Class cm																										
	≤3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15		
Gizzard Shad									1	4	4	2	1	1	1												14
Common Shiner			2	2			3	1		1				2	2	2		1	1		1						18
Spotfin Shiner							2																				2
Emerald Shiner				1	3	4	2																				10
Mimic Shiner				1	1	2																					4
Fathead Minnow				2	3	12	3	1																			21
Blacknose Dace					1																						1
Creek Chub				1	2	3	3	4					1	1	2	2	1										20
White Sucker							1		2	3	1	2															9
Green Sunfish									1																		1
Johnny Darter				1																							1
Northern Logperch										1					1	1	1	1	1								6
Blackside Darter							1																				1
Round Goby	21	20	11	16	7	5	11	13	16	3	1	1	2	2													129
Total Fishes Sampled																								237			

LR-11A Brady St. September 9, 2017 Lower Rouge																						Total Number of Fish
Temp. 15° C.	17 Seine Hauls																					
Species	Size Class cm																					
	≤3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5		
Common Shiner				1			1		2	1												5
Emerald Shiner	2		116	118	105	135	1				1		1									479
Mimic Shiner			3	1		1	1															6
Bluntnose Minnow						1	1															2
Fathead Minnow			1	9	6	6	1															23
Blacknose Dace								1														1
Creek Chub				3	2	2	6	2														15
White Sucker							3	3	1		2	1		1	1							12
Gambusia	21																					21
Brook Silverside				3	5	5	6															19
Johnny Darter					2	1																3
Northern Logperch																		1				1
Round Goby	1	1	4	5	2	3	1	5	2	1		2										27
Total Fishes Sampled																					614	

MN-5 8 Mile Rd. Sept. 14, 2017 Main Rouge																								Total Number of Fish	
Temp. 17° C.	Seine Hauls - 24																								
Species	Size Class cm																								
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14		
Central Stoneroller				1	2	1	6	1	1																12
Spotfin Shiner								1																	1
Common Shiner					1																				1
Bluntnose Minnow		2	2	2			2	1	2	1															12
Fathead Minnow			3		5	2	3																		13
Creek Chub						1	4	1	3																9
White Sucker				1	4	3	6	8	2		1	1				1							1	28	
Rock Bass															1		1							2	
Bluegill									3			1												4	
Black Crappie													1			1								2	
Largemouth Bass						1																		1	
Johnny Darter		6	9	5	17	14	13	5	1															70	
Blackside Darter						1		1																2	
<b>Total Fishes Sampled</b>																							<b>157</b>		

MN-2 Eliza Howell Sept. 14, 2017 Main Rouge																							Total Number of Fish
Temp. 15° C.	Seine Hauls - 23 - Time 1.00 Hours																						
Species	Size Class cm																						
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	~	21		
Central Stoneroller								1															1
Fathead Minnow	3	1	11	14	31	26	26	20	2														134
Creek Chub				1																		1	2
White Sucker				1						1	1												3
Johnny Darter						2		1															3
<b>Total Fishes Sampled</b>																						<b>143</b>	

Main14 Mouth of Middle Rouge Sept. 15, 2017 Main Rouge																				Total Number of Fish
Temp. 17° C.	Seine Hauls - 24																			
Species	Size Class cm																			
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	
Bluntnose Minnow										1										1
Fathead Minnow	56	52	56	8	8	5	6	2												193
Creek Chub						1		1												2
White Sucker						1	1	1												3
Johnny Darter				1	7		1													9
Round Goby	1			2	4			1	2	1										11
<b>Total Fishes Sampled</b>																				<b>219</b>

MN-7A Rouge Park Sept. 15, 2017 Main Rouge																							Total Number of Fish		
Temp. 17° C.	Seine Hauls - 20																								
Species	Size Class cm																								
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	~	17	
Carp									1																1
Common Shiner					1		1																		2
Bluntnose Minnow			1				1	1																	3
Fathead Minnow	34	22	23	33	34	16	27	9	2	1															201
Creek Chub						1	5	2	2	1		1				1			1		2	1		1	18
White Sucker				1	5	3	2	2																	13
Yellow Bullhead						1																			1
Johnny Darter				2	1	2	1	1																	7
Round Goby	1		1	1	4	3	1	1		1		1													14
<b>Total Fishes Sampled</b>																							<b>260</b>		

CL - Curtis Silver Spring Dr. Sept. 22, 2017 Curtis Lake - Middle Rouge																										Total Number of Fish		
Temp. 29° C.	16 Seine Hauls																											
Species	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	~	16	
Green Sunfish									1		2	1	1	1														6
Pumpkinseed			1	1				1	1	1	2		1		1	1	1		1		2		1		1		2	18
Bluegill	27	20	8	14	17	17	32	9	23	17	25	3	17	5	8	1	4		1		1		1					250
Largemouth Bass					1			1																1				3
Iowa Darter	16	13	8	9	1	1																						48
Least Darter	20	23																										43
<b>Total Fishes Sampled</b>																										<b>368</b>		

ULL - Upper Long Lake Sept. 23, 2017 Main Rouge																											Total Number of Fish				
Temp. 25° C.	Seine Hauls - 22																														
Species	Size Class cm																														
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	~	16	17	18	19	20
Pugnose Shiner						1																									1
Blackchin Shiner	18	27	28	18	17	5	5	2																							120
Blacknose Shiner	1		3	5	3																										12
Bluntnose Minnow			2	2	6		2	3	1	2	2																				20
Yellow Bullhead							1																							1	2
Northern Pike																											2				2
Central Mudminnow				1																											1
Pumpkinseed										1			2	1	7	6	5	1			2	1	3	1	1			1		32	
Bluegill	8	11	2	3	7	6	2	3	1	3	10	11	9	12	10	3	4			1		1	1		2		1	1		112	
Hybrid Sunfish													2	2																8	
Smallmouth Bass												1																		1	
Largemouth Bass						4	2	8	6	3	1									1										25	
Iowa Darter		4	4	2		1																								11	
Least Darter	33																													33	
Yellow Perch							1	1	2	8	1						2	3		1										19	
<b>Total Fishes Sampled</b>																										<b>399</b>					

Main12 - South Oxbow Sept. 29, 2017 Main Rouge																												Total Number of Fish																										
Temp. 19° C.	Seine Hauls - 10																																																					
Species	Size Class cm																																																					
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	~	16	55																										
Gizzard Shad					2	2	11	7	4	4	4		1																	35																								
Common Shiner					1		1																							2																								
Golden Shiner					3	2	6	4	2				1																	18																								
Emerald Shiner				1	3	3	7																							14																								
Blacknose Shiner			1	2	1																									4																								
Bluntnose Minnow				2	1	1	1	1																						6																								
Fathead Minnow				1	2	1	2																							6																								
White Sucker													2																	2																								
Yellow Bullhead																							1							1																								
Northern Pike																												1		1																								
Gambusia	5	4	13	4		1																								27																								
Brook Silverside			1		2	1	2	2																						8																								
Pumpkinseed															1				1											2																								
Bluegill	6	6	21	2	18	13	10		2	1					1		1													81																								
Yellow Perch																	1		1		1		1			1		1		6																								
Northern Logperch									2			1																		3																								
Round Goby	16	14	19	26	31	15	21	2	2		6	1	2		1															156																								
<b>Total Fishes Sampled</b>																																																						372

North Oxbow Sept. 29, 2017 Main Rouge																												Total Number of Fish																												
Temp. 19° C.	Seine Hauls - 10																																																							
Species	Size Class cm																																																							
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	~	16	19	22	50																										
Gizzard Shad							1			1																					3																									
Common Carp																														1		1																								
Golden Shiner			2		2																										4																									
Fathead Minnow		6	13	4	9	1	1																								34																									
White Sucker																												1	1		2																									
Bluegill	2		7	1	1												1														12																									
Yellow Perch																1	2		1	3	1		1								9																									
Round Goby	7	2	7	4	4	6	10	1	2	1	3	1		2																	50																									
<b>Total Fishes Sampled</b>																																																								115

2018 Sites

<b>Fowl6 - stream above Fowl1 - April 30, 2018</b>																		<b>Total Number of Fish</b>	
<b>Temp. 11° C.</b>																			
<b>Species</b>	<b>Size Class cm</b>																		
	<b>≤ 3</b>	<b>3.5</b>	<b>4</b>	<b>4.5</b>	<b>5</b>	<b>5.5</b>	<b>6</b>	<b>6.5</b>	<b>7</b>	<b>7.5</b>	<b>8</b>	<b>8.5</b>	<b>9</b>	<b>9.5</b>	<b>10</b>	<b>10.5</b>	<b>~</b>	<b>13.0</b>	
<b>Fathead Minnow</b>		2	11	10	8	4	6		2										<b>43</b>
<b>Northern Redbelly Dace</b>				3	4	3	3												<b>13</b>
<b>Creek Chub</b>																	1		<b>1</b>
<b>Central Mudminnow</b>				1	1	1	2			1									<b>6</b>
<b>Brook Stickleback</b>				2	2	1													<b>5</b>
<b>Total Fishes Sampled</b>																		<b>68</b>	

Fowl2 Beck Rd. May 5, 2018 Fowler Creek																									Total Number of Fish	
Temp. 15° C.	21 Seine Hauls																									
Species	Size Class cm																									
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	14	14.5	20		
Fathead Minnow				2	8	9	9	2	2																	32
Creek Chub																								1		1
White Sucker									1						1								1		1	4
Bluegill			1																							1
Johnny Darter			6	8	19	6	12	6																		57
Round Goby	1	2	5	4	5	2	1																			20
<b>Total Fishes Sampled</b>																								<b>115</b>		

Low9 May 5, 2018 Beck Rd. - Lower Rouge																							Total Number of Fish		
Temp. 16° C.	21 Seine Hauls																								
Species	Size Class cm																								
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	~	17	47					
Central Stoneroller							1	1																	2
Common Carp																							1		1
Fathead Minnow				2	7	3	4	2	1																19
Blacknose Dace				1						1	1														3
Creek Chub								2	1							1		1							5
White Sucker						1	2		2	1	1	2		1							1				11
Johnny Darter		4	19	17	23	5	5		1																74
Round Goby							1																		1
<b>Total Fishes Sampled</b>																						<b>116</b>			

Low5 May 25, 2018 Lotz Rd. - Lower Rouge																					Total Number of Fish
Temp. 18° C.	20 Seine Hauls																				
Species	Size Class cm																				
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	~	13.5	
Fathead Minnow	1		6	1	2	5	3	2	1												21
Blacknose Dace							4														4
Creek Chub				1			2	2	2												7
White Sucker											1									1	2
Green Sunfish			3		2	1	1														7
Pumpkinseed							2														2
Bluegill					1																1
Largemouth Bass											1										1
Johnny Darter								1													1
Round Goby			5	2	2	4	6	4	2	2											27
Total Fishes Sampled																				73	

Low7 May 25, 2018 RR Tracks - Lower Rouge																					Total Number of Fish	
Temp. 18° C.	20 Seine Hauls																					
Species	Size Class cm																					
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	~	12	14	76	
Central Stoneroller							1												1			2
Common Carp																					1	1
Fathead Minnow		4	9	3	1	2	1															20
Creek Chub					1		1		1							1						4
White Sucker											1		1	2						1		5
Green Sunfish					1									1								2
Bluegill					1																	1
Yellow Perch															1							1
Round Goby			2	7	17	10	15	8	4				1									64
Total Fishes Sampled																				97		

LR-10 May 29, 2018 Inkster Rd. - Lower Rouge																					Total Number of Fish	
Temp. 22° C.	25 Seine Hauls																					
Species	Size Class cm																					
	≤3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	~	12	15	17	
Central Stoneroller											1											1
Common Shiner						1					1		1		1		1				3	8
Emerald Shiner							1		2													3
Fathead Minnow		2	4	1	2	3	3	2	1													18
Blacknose Dace					1																	1
Creek Chub								2	4		2				1		1		2			12
White Sucker													1		1						1	3
Green Sunfish				1		1																2
Pumpkinseed								1														1
Bluegill					1	1																2
Yellow Perch												1										1
Northern Logperch									1				2		1				1			5
Blackside Darter							2	1	1			1										5
Round Goby			3	4	12	9	8	7	6	2	2											53
<b>Total Fishes Sampled</b>																					<b>103</b>	

LR-11A May 29, 2018 Brady St. - Lower Rouge																					Total Number of Fish	
Temp. 22° C.	22 Seine Hauls																					
Species	Size Class cm																					
	≤3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	~	12	15	17	
Common Shiner				1	1				1													3
Emerald Shiner				10	47	54	28		1		1											141
Blacknose Shiner					1																	1
Bluntnose Minnow						1	3	3		2												9
Fathead Minnow			5	2	6	6	3															22
Creek Chub							1	1	1													3
Threespine stickleback								1														1
Bluegill											1											1
Johnny Darter						2	2															4
Yellow Perch					1	1		1				2			1	1	1					8
Northern Logperch											1			1	1		1					4
Round Goby					4	6	6	4	9	2	3	1										35
*New species ( <i>Gasterosteus aculeatus</i> )																					232	

Main13 Long Lake Rd. June 1, 2018 Main Rouge																													Total Number of Fish			
Temp. 24° C.	Seine Hauls - 28																															
Species	Size Class cm																															
	≤3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	~	15	16	17	18	20	25	30		
Central Stoneroller								1	2	1	1	1							1												7	
Common Shiner					4	9	18	27	41	36	45	17	6	2	7	2			3	1	1			1							220	
Hornyhead Chub					1	5	12	5	16	13	8	3	1	1	1				1												67	
Bluntnose Minnow			1		1	1	7		1	2																					13	
Fathead Minnow					2	1	3		1																						7	
White Sucker																								3					3	2	2	10
Rock Bass											1				1		1		2										3			8
Pumpkinseed												1			2		2	1			1			1							8	
Bluegill											2		3		1	3	3		3			1		1							17	
Hybrid Sunfish																										1	1	1				3
Largemouth Bass																										1					2	3
Johnny Darter						1	2																									3
<b>Total Fishes Sampled</b>																												<b>366</b>				

Main18 Beach Rd. June 1, 2018 Main Rouge																													Total Number of Fish			
Temp. 24° C.	Seine Hauls - 21																															
Species	Size Class cm																															
	≤3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	~	16								
Central Stoneroller								2						1																	3	
Common Shiner								3	1	3	3	11	1	6	2	2		4	1	4		1							1		43	
Bluntnose Minnow			3	16	7	15	12	18	5	7	3	1																			87	
Creek Chub								1				2	1	1																	5	
White Sucker																			1												1	
Stonecat														1																	1	
Rock Bass																													1		1	
Pumpkinseed																			1												1	
Bluegill					1														1												2	
Johnny Darter	1				1	8	10	2																							22	
<b>Total Fishes Sampled</b>																												<b>166</b>				

See3 Kennedy Court June 14, 2018																							Total Number of Fish
Temp. 18° C.	Seine Hauls 17																						
Species	Size Class cm																						
	≤3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	~	15	
Common Shiner						2			4		2						1						9
Fathead Minnow			4	2	3	9	13	2															33
Blacknose Dace					1	2	6	5	1														15
Creek Chub					1	1	2	7	5		5	2	2	2	2		1						30
White Sucker																						1	1
Brook Stickleback				1	1																		2
Mottled Sculpin												1											1
Pumpknseed								1															1
Bluegill			1		5																		6
Johnny Darter					1	2	8	2	1														14
<b>Total Fishes Sampled</b>																						<b>112</b>	

Up1 Heritage Park June 14, 2018 Upper Rouge																							Total Number of Fish	
Temp. 19° C.	Seine Hauls 31																							
Species	Size Class cm																							
	≤3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	~	14	15	16	
Common Shiner					3	2	4	1	2	2	7	6	10	2	3	2	2	3	5		2			56
Fathead Minnow						1	4	3	1	1														10
Blacknose Dace					4	3	9	2	8	6	4	1												37
Creek Chub						1	3	4	5	3	4	1	1	2	2		1						1	28
White Sucker													1									1		2
Northern Hogsucker										1	1	1												3
Mottled Sculpin				5	4	3	1	1					1		1									16
Green Sunfish									1		1													2
Rainbow Dater			1	1	7	1	3	1																14
Johnny Darter						1	2		1															4
<b>Total Fishes Sampled</b>																						<b>172</b>		

Evan3 9 Mile Rd. June 22, 2018 Evan Creek - Main Rouge																												Total Number of Fish					
Temp. 18° C.	Seine Hauls - 22																																
Species	Size Class cm																																
	≤3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	~	16	17	18	20	22		
Common Shiner								1				1																					2
Fathead Minnow		3	12	11	24	10	9	5	2			1																					51
Blacknose Dace					2	2	4	3		1																							12
Creek Chub						1	2	4	4	3	3		1		3	1	1		2		1						1		1				28
White Sucker									2	1	1		3	1			1		2	2	1	1							1	1	1	1	19
<b>Total Fishes Sampled</b>																											<b>112</b>						

Main19 9 Mile Rd. June 22, 2018 Main Rouge																												Total Number of Fish						
Temp. 24° C.	Seine Hauls - 28																																	
Species	Size Class cm																																	
	≤3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	~	15	16	18										
Common Shiner						2	6	2	4	3	2	1	2		3				1	3													29	
Blackchin Shiner					1	1																												2
Bluntnose Minnow			1				1	1																										3
Fathead Minnow			2		1		1																											4
Blacknose Dace			1	1		1	1																											4
Creek Chub									2		4		1	2		1		1																11
White Sucker															1	5	1		1								1							9
Rock Bass																														1				1
Pumpkinseed							1																											1
Bluegill												1																			1			2
Largemouth Bass	1	1																																2
Johnny Darter	38				4	4	5	2	1																									54
Blackside Darter	3																																	3
<b>Total Fishes Sampled</b>																											<b>125</b>							

John2 Five Mile Rd. W. of Ridge Rd. June 26, 2018 Johnson Creek - Middle Rouge																	Total Number of Fish
Temp. 16° C.	20 Seine Hauls																
Species	3 ≤	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	11	
Central Stoneroller							2		1	2	1					1	7
Bluntnose Minnow				1	1		1	1									4
Fathead Minnow						1	2	1	1								5
Creek Chub			5	7	20	4	13	9	6	3							67
White Sucker		1	4	1									1	2	1		10
Central Mudminnow				1													1
Brook Stickleback	5	1	1														7
Mottled Sculpin	4						1		2						1		8
Pumpkinseed					1												1
Bluegill			1	1	2		1	1	2				1				9
Large mouth Bass	1	5	6	10	1							1					24
Rainbow Darter						2											2
Johnny Darter	3						2										5
Yellow Perch													1			3	4
<b>Total Fishes Sampled</b>																	<b>154</b>

John3 Six Mile Rd. W. of Beck Rd. June 26, 2018 Johnson Creek - Middle Rouge																					Total Number of Fish			
Temp. 16° C.	30 Hauls																							
Species	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	~	14	15	
Central Stoneroller										1	1				1	1								4
Bluntnose Minnow						5	2	1																8
Fathead Minnow				1	1	1	1																	4
Blacknose Dace						1	1			1	1													4
Creek Chub									1					1			1			1		1	1	6
White Sucker				1												1						1		3
Mottled Sculpin				1	1	6	6	1	1			1												17
Bluegill					2	3	1		1		2	2	2	1									1	15
Large mouth Bass		1																						1
Rainbow Darter					1	2	2	2	1															8
<b>Total Fishes Sampled</b>																					<b>70</b>			



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## Rouge River Benthic Macroinvertebrate Monitoring Program Fall 2017 Report

This report contains benthic macroinvertebrate sampling results from 42 Rouge tributary and river sites. The Fall Bug Hunt on October 14 had 60 participants despite off and on rain all day. There were 12 teams that sampled 23 sites. Groups participating included four teams from Wayne State University and one team from Fordson High School. The Schoolcraft College Geography Department once again provided the meeting space and refreshments (which Diane O’Connell graciously picked up and delivered) and volunteer Daisy Lovain ran the registration with her niece Rose Kachadoorian.

This report also includes data from additional FOTR sampling, one site sampled by Schoolcraft College students, three sites sampled by Sue Thompson and fifteen sites sampled by Wayne County DPS.

### Overall Scores

Of the 42 sites sampled this fall, the average Stream Quality Index (SQI) was FAIR (25) (map p.6, Table 1 & 4). Sites averaged 11 taxa. No sensitive families were found. No sites had EXCELLENT Stream Quality Index Scores. Five sites were GOOD; 29 sites were FAIR and eight sites scored POOR. The number of taxa found at sites was highest at MR-20 (18) and lowest at Low4 (4).

Average SQI	Average # of taxa	Average # EPT	Average # Sensitive Families
25	11	2	0

Some mayfly, stonefly and caddisfly families (EPT) were found at all but six sites with an average of two of these families per site. One Middle Rouge site had the highest number (4 families at MR-20) and seven sites had three families. No sensitive families were found at any sites.

**Understanding Benthic Scores**

Each site is given a **Stream Quality Index (SQI)** which is determined by weighting each type and number of organisms found by their sensitivity ratings. A higher proportion of sensitive organisms such as mayflies and caddisflies results in a higher **SQI**. A greater number of different organisms also results in a high **SQI**. The **SQI** has four different levels: **>48=EXCELLENT, 34-48=GOOD, 19-33=FAIR, <19=POOR**.

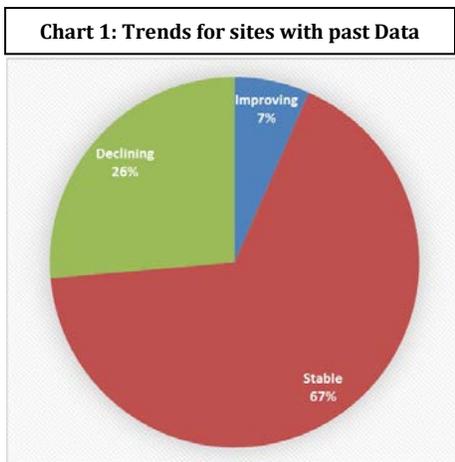
**Number of taxa** represents the number of different families of organisms. Like SQI, a higher number of taxa indicate a healthier site.

**Number of insect taxa** – insects are more sensitive than the non-insect taxa.

**EPT** refers to the number of mayfly, caddisfly and stonefly families found; these three orders contain some of the most sensitive organisms.

**Number of sensitive families** refers to the number of families of insects that rate very sensitive on the Hilsenhoff Biotic Index.

### Data Trends



For the thirty-one sites that had three or more years of past data, 67% were stable, 7% were improving and 26% were declining (Chart 1). Compared to last fall, a higher percentage of sites are declining (18% in 2016), fewer sites are improving (11% in 2016) and fewer are stable (70% in 2016).

To compare change over time, we analyzed the trends (Table 2 and Figures 1-8). The Middle 3 subwatershed and Johnson Creek had significant positive trends and both the Main 1-2 and the Upper Branch had significant negative trends. These were the same trends in fall 2016.

Table 2: Fall Data Trend Summary All Sites 2001-2017

Subwatershed	slope	p-value	True trend	Subwatershed average score	Water Quality Rating
Main 1-2	-0.4316	0.0166	yes, negative	30	Fair
Upper	-0.3845	0.0031	yes, negative	25	Fair
Johnson Creek	0.5207	0.0166	yes, positive	35	Good
Middle 1	-0.0997	0.5975	No trend	32	Fair
Middle 3	0.4998	0.0016	yes, positive	22	Fair
Lower 1	-0.3513	0.0546	no trend	29	Fair
Lower 2	-0.1153	0.5925	no trend	26	Fair

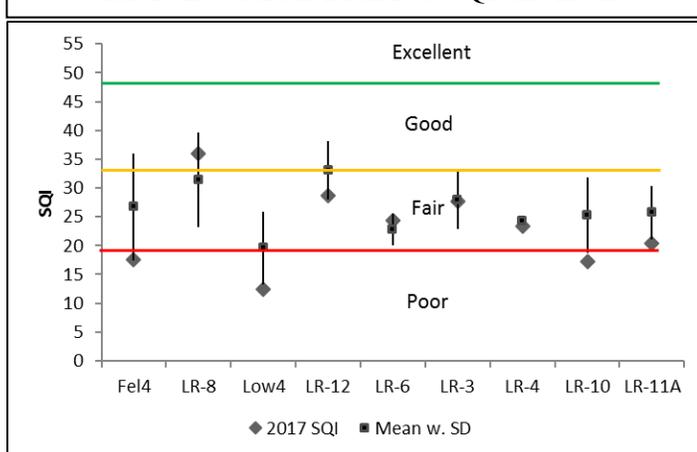
Individual sites were examined for long term trends (Table 3). Of the sites with sufficient data sampled in Fall 2017, two had significant trends and both were Middle Branch sites. One showed an improving trend (MR-13) while the other showed a declining trend (Ing1).

Table 3: Fall Data Trend Summary by Site 2001-2017

Site	slope	p-value	True trend	Site average score	Water Quality Rating
MR-13	0.5125	0.0326	yes, positive	22	Fair
Ing1	-1.5661	0.0216	yes, negative	28	Fair

### Lower Branch

Chart 2: Lower Branch Fall 2017 SQIs and means



Nine sites were sampled on the Lower Branch of the Rouge (see Table 3). One tributary was sampled: Fellows Creek. SQIs averaged FAIR (23). One site scored GOOD, five FAIR and three POOR.

All nine sites had three or more years of data (Chart 2). Four sites were below a standard deviation of the average for the site (Low4, LR-4, LR-10, LR-11A). Long term trend analysis showed no significant change in the scores for the Lower Branch since 2001. No individual sites showed a significant trend.

LR-8 is the only site upstream of the discharge from the Ypsilanti Waste Water Treatment Plan (YWWTP) (and Fel4 is on a tributary). The extreme low water levels due to the stopping of the discharge from the plant led to low dissolved oxygen levels (see below). This would make it difficult for sensitive benthic macroinvertebrates, especially those that use gills, to survive.

## Waste Water Treatment Plant Effect on the Lower Branch

The Lower branch has been receiving treated water from the Ypsilanti Waste Water Treatment Plant (YWWTP) since 1992, averaging about 11 million gallons per day. The treated water is discharged into the Lower Rouge River at Beck Road in Canton Township. Prior to 1992, the Lower branch would reach very low daily flows (0.03-0.06 cubic meters) and subsequently had very low levels of dissolved oxygen. The new discharge increased daily flows to a minimum of 0.71 cubic meters and increased dissolved oxygen levels such that they have met state standards of 5 mg/L since 2002.

On Sept. 5, 2017, the YWWTP temporarily stopped discharging into the Lower Rouge in order to repair effluent pumps, to be completed by March 2, 2018. Flows dropped from an average of 23.4 cubic feet per second (cfs) to as low as 2.11 cfs on October 5 (Chart 3). Dissolved oxygen levels fell below 5 mg/L on September 7 and dropped to as low as 1.5 mg/L on September 27, 2017 (Chart 4). Freshwater fish (warmwater) need a minimum of 5.0 mg/L with minimal fluctuations. Benthic macroinvertebrates, especially sensitive families that use gills to breathe like mayflies, stoneflies and caddisflies, will not survive long in these conditions.

Rain in October increased the flow and dissolved oxygen levels recovered with the increased flow and dropping temperatures. Friends of the Rouge has been in communication with the treatment plant and has been assured that repairs have been expedited and the discharge should be back on line before the end of 2017. Hopefully this happens before aquatic life in the Lower Rouge is permanently damaged.

Chart 3: Lower Rouge River Discharge 9/5/17-10/14/17

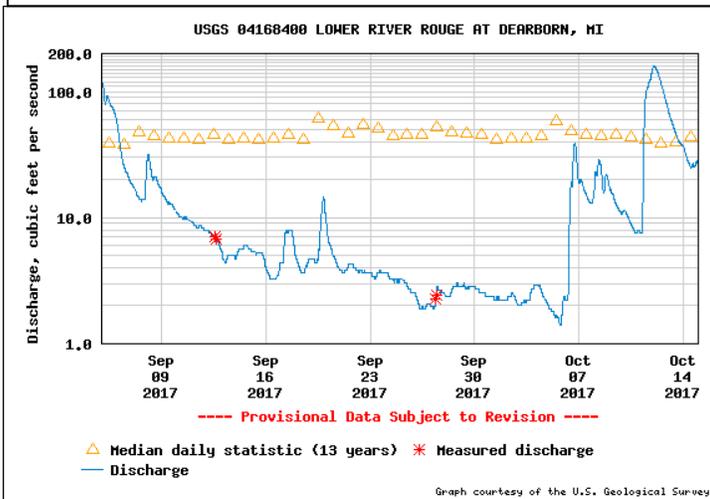
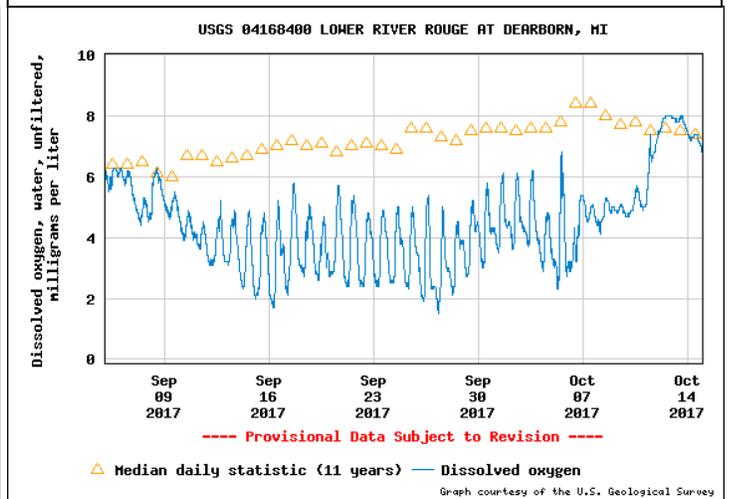


Chart 4: Lower Rouge River DO 9/5/17-10/14/17

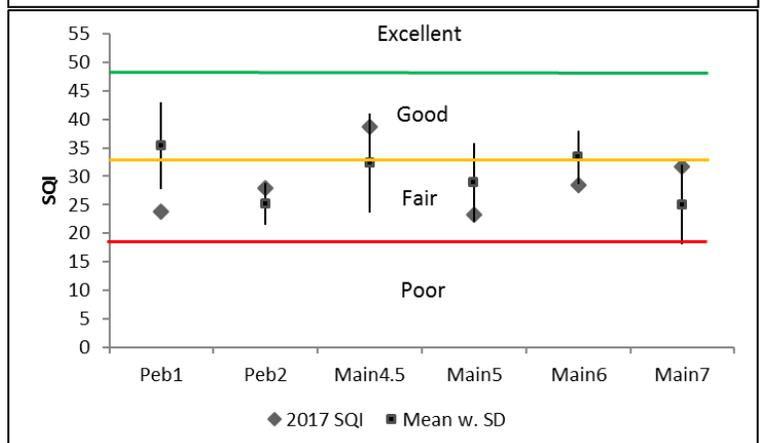


## Main Branch

Eight sites on the Main Branch were sampled, including two tributaries: Evans and Pebble. SQIs averaged FAIR (26). There was one GOOD, six FAIR, and one POOR SQIs. The GOOD site was Main4.5.

Six sites on the Main had three or more years of data (Chart 5). Two sites were below a standard deviation of the mean (Peb1, Main6). Long term trend analysis shows a significant negative trend for the Main 1/2 subwatershed (Table 2, Fig. 1-7).

Chart 5: Main Branch Tributary Fall 2017 SQIs and means



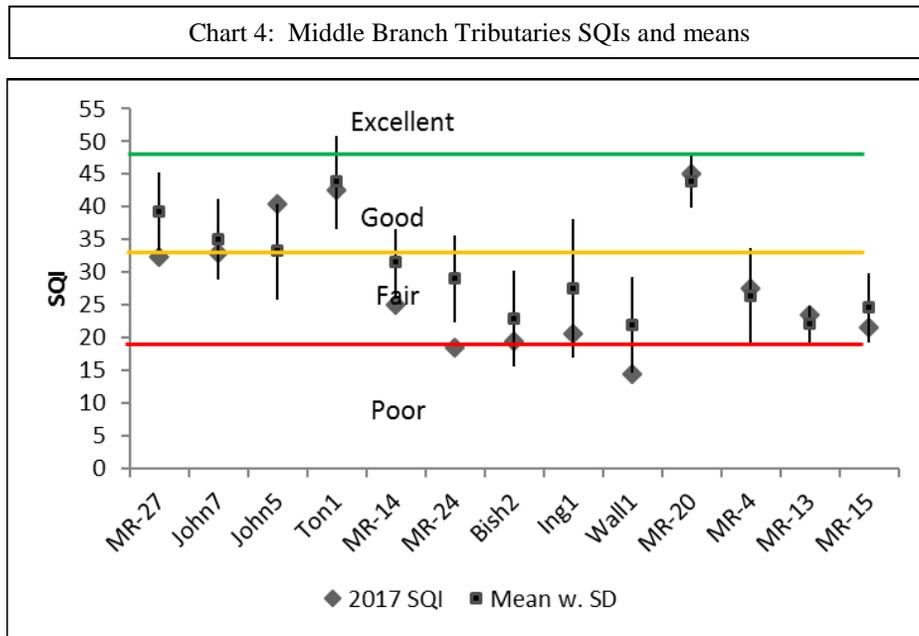
### Asian clams

Non-native clams from Asia (*Corbicula fluminea*) were first found in the Rouge in 2009 in the Middle Branch and in the Lower branch in 2010 but had not been found in the Upper and Main Branches. This year, for the first time, they were found at Main5, Douglas Evans Nature Preserve. This is very unfortunate in that the Main Branch has the largest diversity of native clams of the four Rouge branches. Asian clams are known to contribute to the decline and replacement of already rare native clams.



### Middle Branch

Thirteen sites were sampled on the Middle Branch including Bishop, Ingersoll, Johnson (3), Tonquish (3) and the Walled Lake drainage (Table 3). SQI scores averaged FAIR (28). There were three GOOD, eight FAIR and two POOR (MR-24 & Wall1) SQIs.

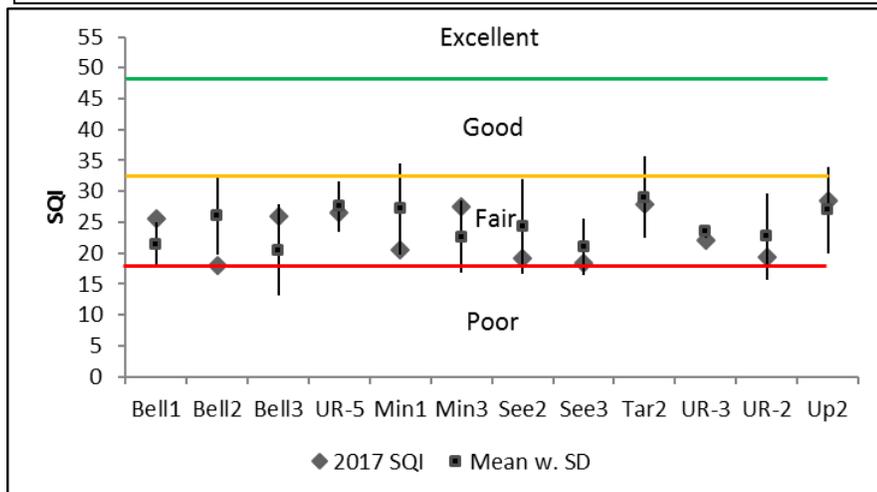


Thirteen sites had three years or more of data (Chart 4). Of these, one was above a standard deviation of the mean (John5) and four were below (MR-27, MR-14, MR-24, & Wall1).

In long term trend analysis, the Middle 3 and Johnson Creek had positive trends (Table 2, Figures 1-7). One Middle Branch site showed a positive trend (MR-13) and one a negative trend (Ing1) (see Table 3).

## Upper Branch

Chart 5: Upper Branch SQIs and means



Twelve Upper branch sites were sampled this fall, including Bell (4), Minnow Pond (2), Seeley (2), and Tarabusi (2) (Table 3). SQIs averaged a low FAIR (23). Ten sites were FAIR and two POOR (Bell2 & See3).

All twelve sites had three years or more of data (Chart 5). One site was above a standard deviation of the mean (Bell1) and two sites were below (Bell2 & UR-3). Long term trend analysis shows a significant decline in scores since 2001. No individual sites

had significant trends.

## Red Swamp Crayfish

This summer, volunteer Philip Kukulski alerted FOTR and the Michigan Department of Natural Resources to the presence of a new invader: the red swamp crayfish. This aggressive bright red crayfish from Louisiana digs massive burrows and outcompetes the native crayfish. It was discovered in a retention pond in Novi where the DNR found and removed as many as 1,000 individuals. FOTR has been working with the DNR to keep tabs on whether they have moved out of the ponds and into any Rouge streams. Bug Hunt Teams Leaders were all on the alert for these crayfish. Happily they were not found at any sites during the Fall Bug Hunt. We will remain on the alert.



Red swamp crayfish (*Procambarus clarkii*)  
photo credit: Philip Kukulski

## THANK YOU!!!!!!

Thank you to all the **volunteers** and **Team Leaders**, **Schoolcraft College** for hosting the event, professor **Diane O'Connell** and the **Geography Department** for **providing refreshments**, **Daisy Lovain** and **Rose Kachadoorian** for running registration, **Wayne County** for sampling and providing data for 15 sites, **Sue Thompson** for sampling additional sites, helping with identification, trend analysis and reviewing the report, biologist **Bruce McCulloch** for identifying most of the specimens, SQI comparison graphs and reviewing the report, and the **Alliance of Rouge Communities** for funding the program.

## Join us for the Winter Stonefly Search

Sat. Jan. 20, 2018 9 am – 3 pm at UM-D

Register at [www.therouge.org](http://www.therouge.org)

(by Jan. 5, 2018)



**Table 4: Fall 2017 Data**

Stream Name	FIELDID	Site Name	Collector*	SQI	SCORE	# Taxa	# EPT	# Sens Families
Lower								
Fellows Creek	Fel4	Flodin Pk	FOTR	18	POOR	8	2	0
Lower Rouge	LR-8	Ridge Proctor	FOTR	36	GOOD	14	3	0
Lower Rouge	Low4	Sheldon Rd	FOTR	12	POOR	4	1	0
Lower Rouge	LR-12	Morton Taylor	WC	29	FAIR	13	2	0
Lower Rouge	LR-6	Wayne WDM	WC	24	FAIR	11	2	0
Lower Rouge	LR-3	Goudy Park	WC	28	FAIR	11	2	0
Lower Rouge	LR-4	Merriman Rd	WC	23	FAIR	9	2	0
Lower Rouge	LR-10	Inkster	WC	17	POOR	7	2	0
Lower Rouge	LR-11A	Ford Field east	WC	20	FAIR	8	2	0
Main								
Evans Creek	Evan2	LTU	FOTR	13	POOR	8	0	0
Pebble Creek	Peb1	Danvers Ct	FOTR	24	FAIR	10	0	0
Pebble Creek	Peb2	Pebble 13 Mile	FOTR	28	FAIR	12	0	0
Main Rouge	Main4.5	Fairway Pk	FOTR	39	GOOD	15	1	0
Main Rouge	Main5	Douglas Evans	FOTR	23	FAIR	9	1	0
Main Rouge	Main6	Sfld Civic Ctr	FOTR	29	FAIR	14	1	0
Main Rouge	Main7	Sfld 10 M	WC	32	FAIR	15	3	0
Main Rouge	MN-7	Rouge Park	WC	23	FAIR	9	3	0
Middle								
Johnson Creek	MR-27	Ridge	ST	32	FAIR	14	2	0
Johnson Creek	John7	Arcadia	FOTR	33	FAIR	13	3	0
Johnson Creek	John5	Fish Hatchery Pk	FOTR	41	GOOD	14	3	0
Tonquish Creek	Ton1	Plym Twp Pk	FOTR	43	GOOD	16	2	0
Tonquish Creek	MR-14	Smith Elem	ST	25	FAIR	11	1	0
Tonquish Creek	MR-24	Lion's Pk	ST	18	POOR	9	0	0
Bishop Creek	Bish2	Bishop Scarborough	FOTR	20	FAIR	7	1	0
Ingersoll Creek	Ing1	Brookfarm Park	FOTR	21	FAIR	13	0	0
Walled Lk Drainage	Wall1	Rotary Pk	FOTR	14	POOR	8	1	0
Middle Rouge	MR-20	Waterford Bd	WC	45	GOOD	18	4	0
Middle Rouge	MR-4	Levan Knoll	WC	28	FAIR	11	3	0
Middle Rouge	MR-13	Warrendale	WC	24	FAIR	11	3	0
Middle Rouge	MR-15	Outer Dr Ford	WC	22	FAIR	7	2	0
Upper								
Bell Branch	Bell1	Bicentennial Park	FOTR	26	FAIR	13	2	0
Bell Branch	Bell2	Schoolcraft College	SC	18	POOR	11	0	0
Bell Branch	Bell3	Livonia 6 Mile	FOTR	26	FAIR	11	1	0
Beitz Creek	UR-5	Beitz Creek/6 Mile	WC	27	FAIR	10	2	0
Bell Branch	UR-2	Bell Cr Pk	WC	19	FAIR	7	2	0
Minnow Pond	Min1	Minnow 13 M	FOTR	21	FAIR	9	1	0
Minnow Pond	Min3	Dunckel	FOTR	28	FAIR	10	1	0
Seeley Creek	See2	Sleepy Hollow	FOTR	19	FAIR	7	2	0
Seeley Creek	See3	Kennedy Ct	FOTR	18	POOR	10	1	0
Tarabusi Creek	Tar2	Tara 8 M	FOTR	28	FAIR	13	2	0
Tarabusi Creek	UR-3	Tara 7 M	WC	22	FAIR	9	1	0
Upper Rouge	Up2	Shiawasee Park	FOTR	29	FAIR	10	2	0

\*FOTR=Friends of the Rouge, SC=Schoolcraft College, ST=Sue Thompson, WC=Wayne County

Figure 1- Lower1 Subwatershed Mean SQIs

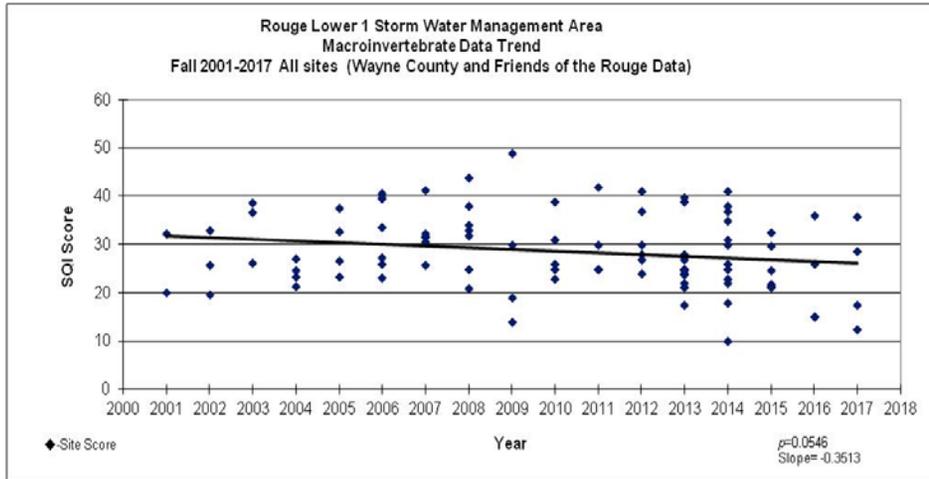


Figure 2- Lower2 Subwatershed Mean SQIs

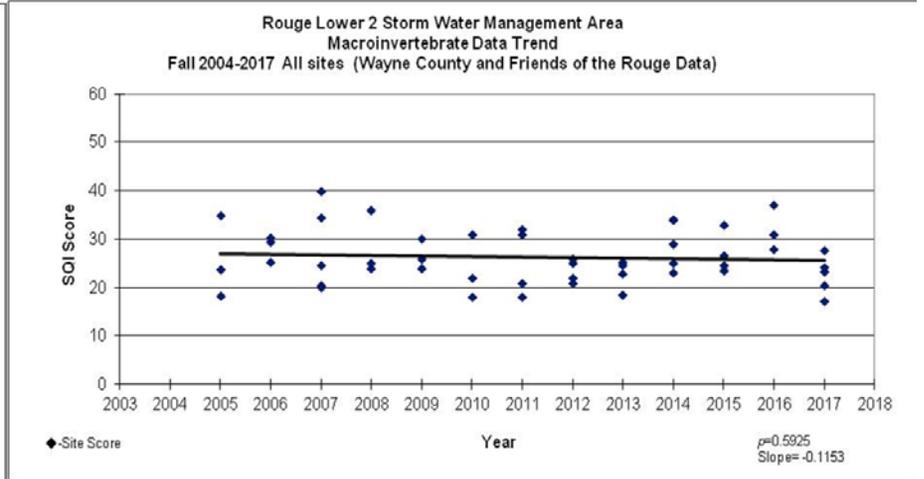


Figure 3- Main 1/2 Subwatershed Mean SQIs

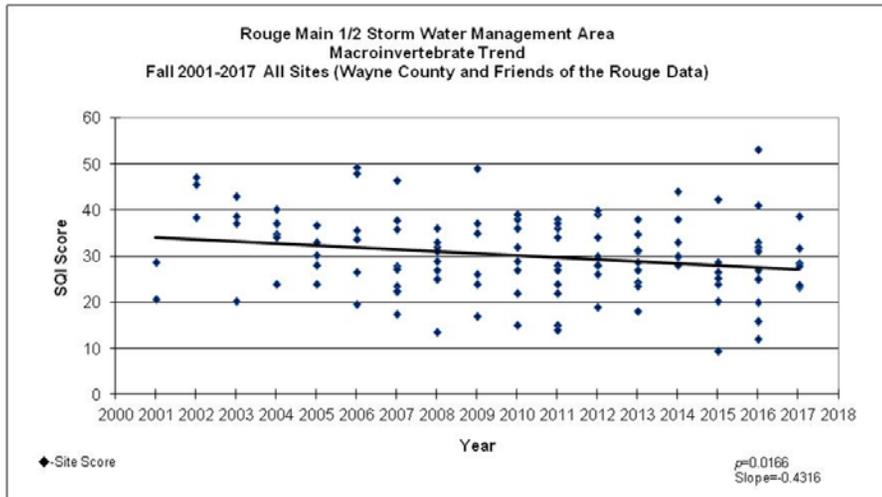
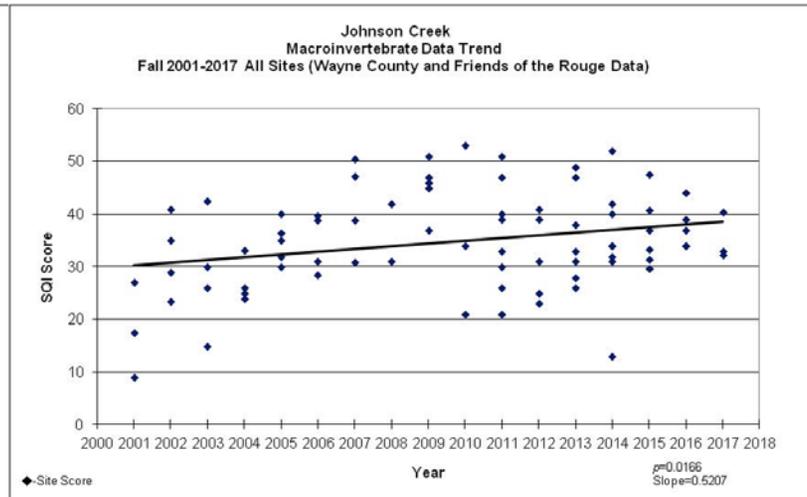
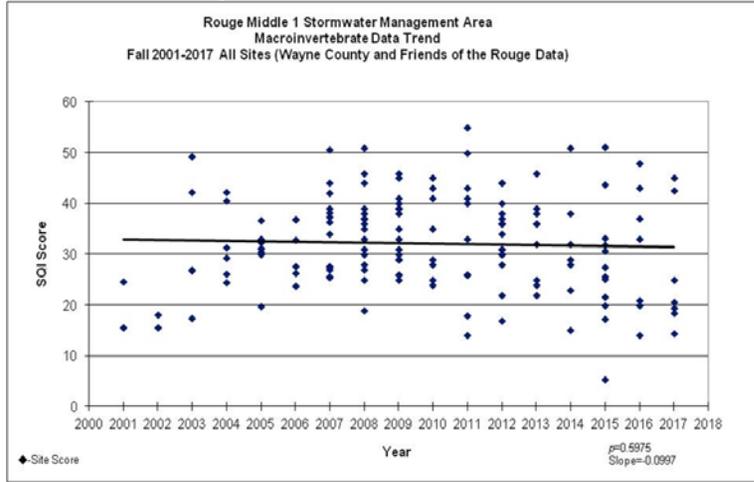


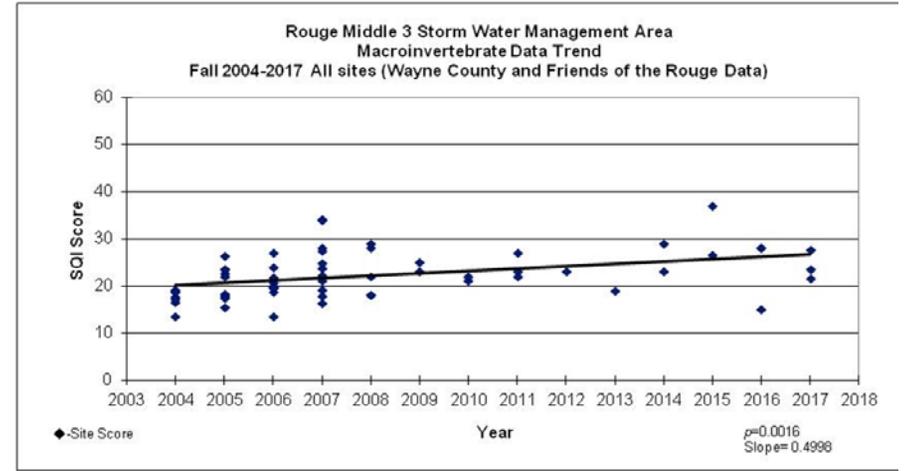
Figure 4- Johnson Creek Mean SQIs



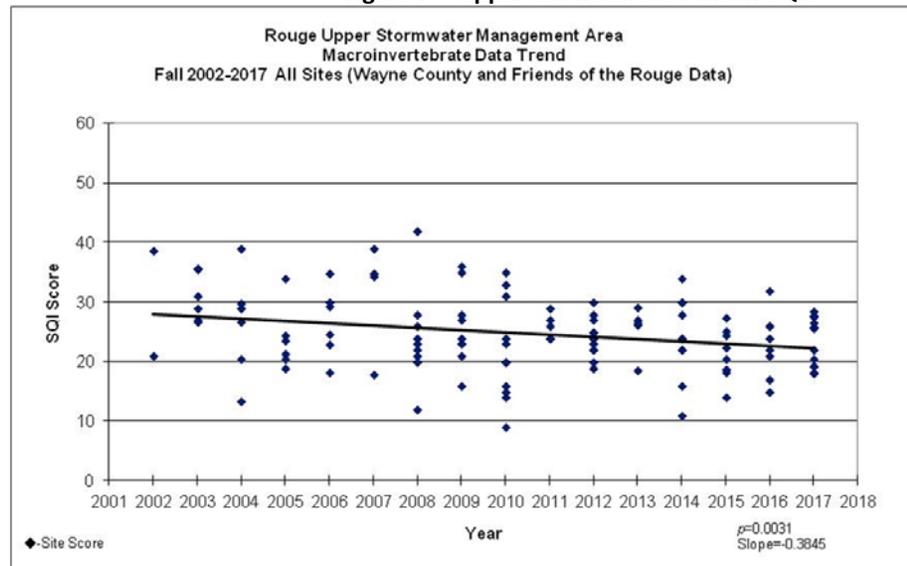
**Figure 5 – Middle 1 Mean SQIs**



**Figure 6 – Middle 3 Subwatershed Mean SQIs**



**Figure 7 – Upper Subwatershed Mean SQIs**



Report on Fish Surveys by Friends of the Rouge, August – October 2018  
for the Alliance of Rouge Communities

Financial assistance provided by the Michigan Areas of Concern Program, Office of the Great  
Lakes, Department of Natural Resources, Environmental Protection Agency

\*The statements, findings, conclusions, and recommendation in this report are those of the Friends of the Rouge  
and do not necessarily reflect the views of the Michigan Department of Natural Resources and the Environmental  
Protection Agency

January 24, 2019

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## **Introduction**

Friends of the Rouge (FOTR) was funded by the Michigan Areas of Concern Program, Office of the Great Lakes (OGL), Department of Natural Resources (DNR), Environmental Protection Agency through the Alliance of Rouge Communities, to sample 20 sites on the Rouge River in late summer/early fall of 2018 for fish using seine and dip nets.

## **Materials and Methods**

FOTR submitted a Quality Assurance Project Plan in July 2018. It was reviewed for the first time by the EPA due to the Office of the Great Lakes moving to the DNR rather than the MEQ. FOTR revised it several times in response to the EPA and it was officially approved by the EPA on August 3, 2018. FOTR developed a list of sites and dates which was submitted to Larissa Sano and Jennifer Tewkesbury.

At each site, 300 feet of stream were sampled using seine and dip nets to sample all available habitats for approximately one hour and at least 20 seine hauls. All fish were identified to species, measured to the nearest half centimeter and released back to the stream. Invasive species were disposed of. Fish with uncertain identification were taken live by Robert Muller, photographed, preserved, and sent to UM Professor Dr. Gerald Smith for identification if still uncertain. Water temperature, number of seine hauls, and fish sizes by species were recorded. Equipment was cleaned and dried at the end of each day and disinfected before moving to another tributary system. Within a given day, sites were sampled within the same tributary system or all equipment was disinfected with a bleach solution between sites.

Following each sampling day, field data was entered into Excel spreadsheets. FOTR checked the raw data against the spreadsheets and entered all into one database.

## **Sites**

There were 21 samplings on 10 sampling days (Table 1, map 1). Sites were chosen to investigate rare species and to continue to track the round goby and its effect on the fish community. The Lower Rouge was sampled at the upstream end to examine the farthest spread of the round goby upstream while downstream sites were monitored to continue to track the effect of this aggressive, invasive fish on the fish community. To better characterize the northern part of the watershed, five lakes were surveyed: Hammond, Simpson, Upper Long Lake, Walnut and Wing Lakes. On the Main branch, Douglas Evans and a new site at Seven Mile were sampled to further examine the area of the watershed with the lowest fish diversity. In addition, two sites were sampled on the Johnson Creek to check for rare species.

## **Results**

Forty-three fish species were identified, forty of which are native (Table 2). In Upper Long Lake, the state endangered pugnose shiner (*Notropis anogenus*) was found in larger numbers than last year.

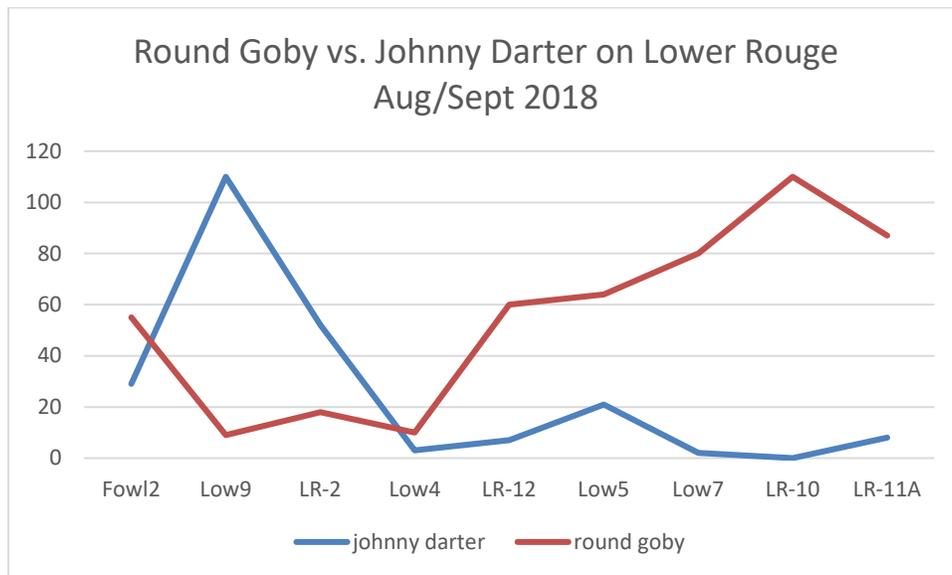
## **Oakland County Lakes**

Five lakes were sampled: Simpson & Walnut in West Bloomfield, Hammond and Upper Long Lake and Wing Lake. State endangered pugnose shiners were found only in Upper Long Lake as well as three other minnow species. The other lakes had gamefish but few minnows. The lake association at Walnut Lake provided us with a report entitled “Ninety Years of Walnut Lake” that provided documentation of lake whitefish in the only lake in southern Michigan.

Round Goby (*Neogobius melanostomus*)

The round goby, an aggressive non-native benthic fish has been moving upstream on the Lower Branch. We have been tracking the round goby movement upstream since the dam at Wayne Road was removed in 2012 and tracking its impact on the fish community. By July 2017, the goby reached Beck Road on both the main Lower Branch (Low9) and Fowler Creek (Fowl2). Johnny darter numbers declined precipitously at sites as they were invaded by round goby.

We continued to track the fish community at 11 sites along the Lower. We found no goby upstream of Beck Road. Johnny darter numbers continue to drop as sites are colonized by round goby. The highest number of johnny darters were at Beck Road on the Lower branch (Low9) and declined as we moved upstream. No johnny darters were found at Inkster Road (LR-10) where the highest number of goby were found (110). At Brady Street, we found 8 johnny darters and 87 round goby.



Degraded Areas

The Main Branch between Eight Mile Road and the confluence with the Middle has had a low number of fish and species. Combined Sewer Overflows are still uncontrolled in this area. We sampled at Douglas Evans (Main5) and Seven Mile (MN-6). The fish community at Main5 was fairly healthy (13 species/94

fish, including stonecat and rock bass) while at the MN-6 site, there were few fish at all and mainly tolerant (5 species/ 56 fish, all tolerant).

#### Rare Species - Johnson Creek & Fowler Marsh

We sampled two sites on Johnson Creek to continue to search for greenside darters but found none. We found no brown trout or redbelly dace but did find rainbow darter. We also checked Fowler Creek at its headwaters to look for the rare northern redbelly dace but found none. We find them there in the spring.

## Appendix

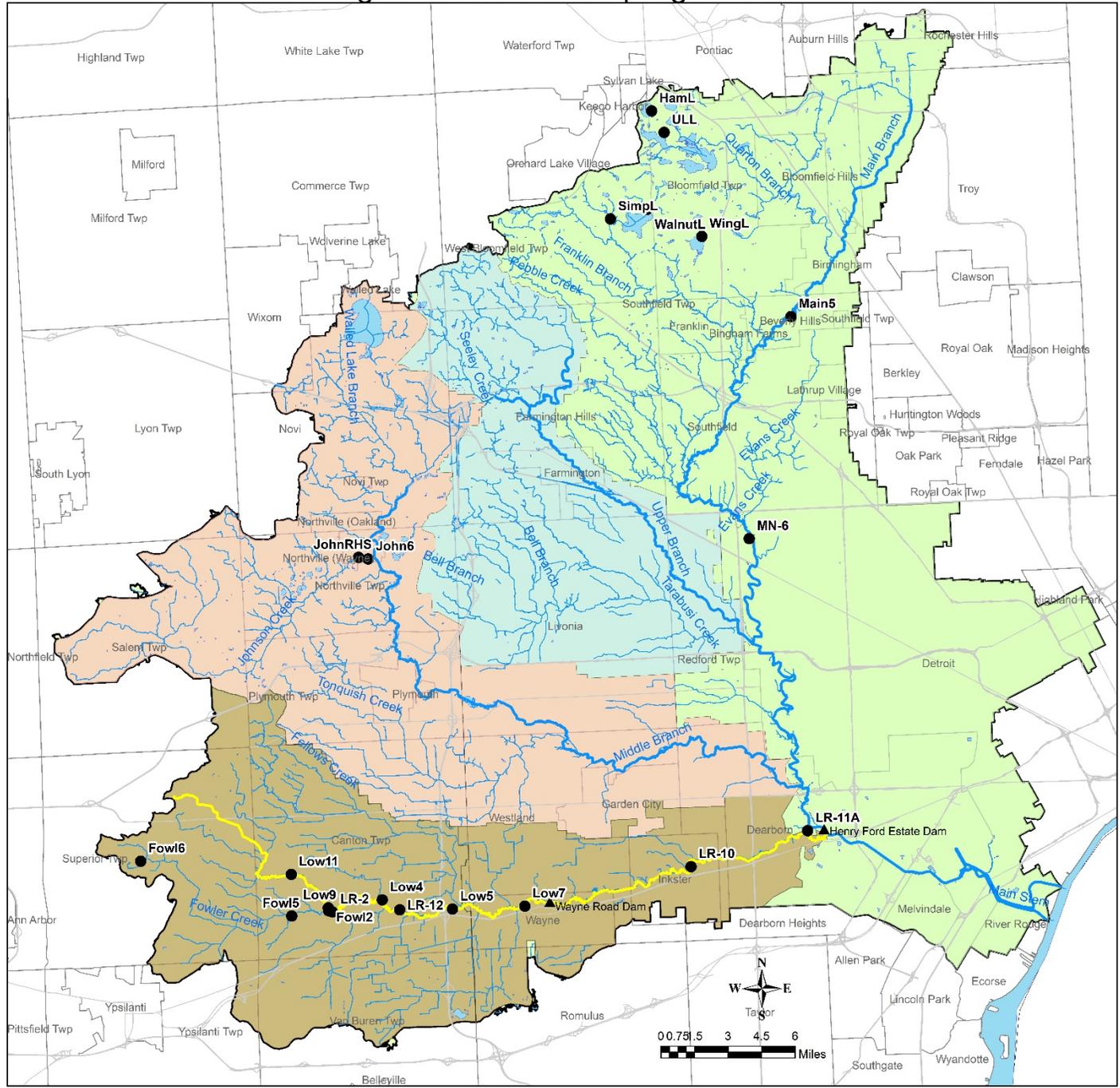
**Table 1 : Sampling Sites**

Branch	FIELDID	Stream/Lake Name	Site Description	Latitude	Longitude	Date Sampled	Water Temp, C	Seine Hauls	Number of species	Total Number of fish
Lower	Fowl2	Fowler Creek	Fowler Beck	42.28226	-83.5052	8/16/2018	26	17	10	130
Lower	Fowl5	Fowler Creek	Fowler Denton	42.28029	-83.5254	8/16/2018	23	16	10	214
Lower	Fowl6	Fowler Creek	Ellsworth	42.3032	-83.608	8/16/2018	19	2	6	70
Lower	Low11	Lower Rouge	Denton Rd	42.29721	-83.5254	8/17/2018	23	21	14	206
Lower	Low4	Lower Rouge	Sheldon Rd	42.28643	-83.4756	8/23/2018	22	21	7	25
Lower	Low5	Lower Rouge	Lotz Rd	42.28239	-83.4371	8/25/2018	20	21	14	171
Lower	Low7	Lower Rouge	RR Tracks	42.28328	-83.3974	8/25/2018	20	20	14	123
Lower	Low9	Lower Rouge	Lower Beck Rd	42.28346	-83.5053	8/17/2018	23.5	20	13	180
Lower	LR-10	Lower Rouge	Inkster	42.29851	-83.3058	9/14/2018	20	23	15	158
Lower	LR-11A	Lower Rouge	Ford Field east	42.31257	-83.2415	9/14/2018	20	21	14	214
Lower	LR-12	Lower Rouge	Morton Taylor	42.28232	-83.4661	9/14/2018	21	23	12	127
Lower	LR-2	Lower Rouge	WTUA	42.28177	-83.503	8/23/2018	22	20	10	125
Main	HamL	Forest Lakes	Hammond Lake	42.60668	-83.3224	8/29/2018	23	17	13	284
Main	Main5	Main Rouge	Douglas Evans	42.52219	-83.2469	9/28/2018	13.5	24	13	94
Main	MN-6	Main Rouge	Seven Mile	42.43192	-83.2715	9/28/2018	14	20	5	56
Main	SimpL	Franklin Creek	Simpson Lake	42.56288	-83.3458	8/24/2018	25.5	13	12	67
Main	ULL	Upper Long Lake	Long Pointe Drive	42.59787	-83.3156	8/29/2018	26	17	13	249
Main	WalnutL	Franklin Creek	Walnut Lake	42.5666	-83.3256	8/24/2018	22	28	10	233
Main	WingL	Quarton Branch	Wing Lake	42.55534	-83.2955	9/8/2018	21	21	11	885
Middle	John6	Johnson Creek	Hines	42.42546	-83.4814	10/9/2018	17	20	13	128
Middle	JohnRHS	Johnson Creek	Rural Hills St	42.42611	-83.4867	10/9/2018	17	30	12	88
									<b>Total</b>	<b>3827</b>

**Table 2: Species Found**

Order	Family	Common Name	Genus	Species	Non-native
Atheriniformes	Atherinopsidae	Brook silverside	Labidesthes	sicculus	
Clupeiformes	Clupeidae	Gizzard shad	Dorosoma	cepedianum	
Cypriniformes	Catostomidae	Northern hog sucker	Hypentelium	nigricans	
Cypriniformes	Catostomidae	White sucker	Catostomus	commersonii	
Cypriniformes	Cyprinidae	Blackchin shiner	Notropis	heterodon	
Cypriniformes	Cyprinidae	Blacknose dace	Rhinichthys	obtusus	
Cypriniformes	Cyprinidae	Bluntnose minnow	Pimephales	notatus	
Cypriniformes	Cyprinidae	Central stoneroller	Campostoma	anomalum	
Cypriniformes	Cyprinidae	Common carp	Cyprinus	carpio	x
Cypriniformes	Cyprinidae	Common shiner	Luxilus	cornutus	
Cypriniformes	Cyprinidae	Creek chub	Semotilus	atromaculatus	
Cypriniformes	Cyprinidae	Emerald shiner	Notropis	atherinoides	
Cypriniformes	Cyprinidae	Fathead minnow	Pimephales	promelas	
Cypriniformes	Cyprinidae	Golden shiner	Notemigonus	crysoleucas	
Cypriniformes	Cyprinidae	Mimic shiner	Notropis	volucellus	
Cypriniformes	Cyprinidae	Pugnose shiner	Notropis	anogenus	
Cypriniformes	Cyprinidae	Spotfin shiner	Cyprinella	spiloptera	
Esociformes	Esocidae	Grass pickerel	Esox	Americanus vermiculatus	
Esociformes	Esocidae	Northern pike	Esox	lucius	
Esociformes	Umbidae	Central mudminnow	Umbra	limi	
Gasterosteiformes	Gasterosteidae	Brook stickleback	Culaea	inconstans	
Perciformes	Centrarchidae	Black crappie	Pomoxis	nigromaculatus	
Perciformes	Centrarchidae	Bluegill	Lepomis	macrochirus	
Perciformes	Centrarchidae	Green sunfish	Lepomis	cyanelus	
Perciformes	Centrarchidae	Largemouth bass	Micropterus	salmoides	
Perciformes	Centrarchidae	Northern sunfish	Lepomis	peltastes	
Perciformes	Centrarchidae	Pumpkinseed	Lepomis	gibbosus	
Perciformes	Centrarchidae	Rock bass	Ambloplites	rupestris	
Perciformes	Centrarchidae	Smallmouth bass	Micropterus	dolomieu	
Perciformes	Centrarchidae	Sunfish hybrid	Lepomis		
Perciformes	Gobiidae	Round goby	Neogobius	melanostomus	x
Perciformes	Percidae	Blackside darter	Percina	maculata	
Perciformes	Percidae	Iowa darter	Etheostoma	exile	
Perciformes	Percidae	Johnny darter	Etheostoma	nigrum	
Perciformes	Percidae	Least darter	Etheostoma	microperca	
Perciformes	Percidae	Northern logperch	Percina	caprodes	
Perciformes	Percidae	Rainbow darter	Etheostoma	caeruleum	
Perciformes	Percidae	Yellow perch	Perca	flavescens	
Salmoniformes	Salmonidae	Rainbow trout	Oncorhynchus	mykiss	x
Scorpaeniformes	Cottidae	Mottled sculpin	Cottus	bairdii	
Siluriformes	Ictaluridae	Stonecat	Noturus	flavus	
Siluriformes	Ictaluridae	Tadpole madtom	Noturus	gyrinus	
Siluriformes	Ictaluridae	Yellow bullhead	Ameiurus	natalis	

# 2018 August - October Sampling Sites



Data Tables

Rare Species: redbelly dace

Fowl6 Aug. 16, 2018 Fowler Creek, Lower Rouge																			Total Number of Fish
Temp. 19° C.	2 Seine Hauls																		
Species	Size Class cm																		
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	~	13.0	
Fathead Minnow	3	7	7	3	5	3													28
Creek Chub			1			1													2
Central Mudminnow		2	2	4	1	4	2	4	7		1		2						29
Brook Stickleback	4	3																	7
Green Sunfish						1													1
Bluegill				3															3
<b>Total Fishes Sampled</b>																			<b>70</b>

Round Goby study

Fowl5 Denton Rd. Aug. 16, 2018 Fowler Creek																								Total Number of Fish			
Temp. 23° C.	16 Seine Hauls																										
Species	Size Class cm																										
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	~	13	14	15	17	18	19	
Central Stoneroller			1		2					1																	4
Common Shiner				1			2				1		2		1						1	1					9
Fathead Minnow		1	3	1	9	8	10	4					1														37
Creek Chub					3	1	1	1	7	5	4	3	1	3	1		5	1			3	3	1			3	46
White Sucker							2	3	4	2		1		1	1	1	2	1			2		1	1	1		23
Central Mudminnow			1																								1
Green Sunfish					4	6	5	7	7	5	2		1		1												38
Bluegill				1			2				1		2		1						1	1					9
Largemouth Bass					1				1																		2
Johnny Darter	1	2	14	6	5	6	19	4	1																		58
<b>Total Fishes Sampled</b>																								<b>214</b>			

Low11 Aug 17, 2018 Denton Rd. - Lower Rouge																												Total Number of Fish	
Temp. 23° C.	21 Seine Hauls																												
Species	Size Class cm																												
	≤3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	~	14	15	17	19	21	50	61	
Gizzard Shad						1			1																				2
Central Stoneroller					2	2																							4
Common Carp																											1	1	2
Common Shiner	2			4	4		4			1	1		1	1	1					3			1					23	
Fathead Minnow				2	7	4	2	5																					20
Blacknose Dace		2		1																									3
Creek Chub		1	2	3	1	2	2	1	1	3	3	1			2					2									24
White Sucker							1			1	1	1			1					1		1		3	1	1			12
Pumpkinseed							2	1	2	2	2		1																10
Bluegill	5	12	13	4	7	12	6	8	11		3																		81
Northern																				1									1
Largemouth Bass							1																						1
Black Crappie																								1					1
Johnny Darter	1	2	5	10	1		1	2	2																				24
<b>Total Fishes Sampled</b>																											<b>206</b>		

Fowl2 Beck Rd. Aug. 16, 2018 Fowler Creek																									Total Number of Fish		
Temp. 26° C.	17 Seine Hauls																										
Species	Size Class cm																										
	≤3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	~	13	14	17	18			
Fathead Minnow			1																								1
Creek Chub											1					1		1	1				1	1			6
White Sucker							7	1	1								1	1	1			1			1		14
Green Sunfish						1	1	3		1					1		1		1								9
Pumpkinseed										1	1	2															4
Bluegill	2		1			1	3	1																			8
Largemouth Bass					1		1							1													3
Johnny Darter	2	3	3		1	2	16	1	1																		29
Yellow Perch																									1		1
Round Goby	19	10	11	1				2	4	5	3																55
<b>Total Fishes Sampled</b>																								<b>130</b>			

LR-2 Aug. 23, 2018 Outflow - Lower Rouge																						Total Number of Fish	
Temp. 22° C.	20 Seine Hauls - 1.25 Hours																						
Species	Size Class cm																						
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	~	14		
Common Shiner																				1			1
Emerald Shiner												1											1
Mimic Shiner				2	20	16	8	3															49
Fathead Minnow				1																			1
Blacknose Dace								1															1
Creek Chub																		1	1				2
White Sucker								1															1
Johnny Darter	11	7	21	5			3	3	1	1													52
Yellow Perch																						1	1
Round Goby	1				1		1	2	4	5	1		2		1								18
<b>Total Fishes Sampled</b>																					<b>125</b>		

Low4 Aug 23, 2018 Sheldon Rd. - Lower Rouge																						Total Number of Fish	
Temp. 22° C.	21 Seine Hauls - 0.5 Hours																						
Species	Size Class cm																						
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	~	13.5			
Mimic Shiner					1																	1	
Fathead Minnow				1		1																	2
Blacknose Dace									2	1	2	1											6
Creek Chub							1	1					1										3
White Sucker							1																1
Johnny Darter					1	2																	3
Round Goby		2							2	3	2	1											10
<b>Total Fishes Sampled</b>																					<b>25</b>		

LR-12 Sep. 14, 2018 Morton-Taylor - Lower Rouge																							Total Number of Fish
Temp. 21° C.	23 Seine Hauls - 43 Minutes																						
Species	Size Class cm																						
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	~	12	15	16		
Common Shiner						1					1						1		1			4	
Mimic Shiner					3	1	1															5	
Bluntnose Minnow					1																	1	
Fathead Minnow		1	6	4	7	4	6	1														29	
Blacknose Dace			1	2		2			1	4	4											14	
Creek Chub					1		1		1		1		1			1				1	1	8	
White Sucker								1	2	1												4	
Northern Hogsucker										1	1											2	
Green Sunfish					1			1														2	
Bluegill											1											1	
Johnny Darter				1		1	1	3	1													7	
Round Goby	16	10	3	3	1	2	3	3	8	5	4	1	1									60	
<b>Total Fishes Sampled</b>																						<b>127</b>	

Low5 Aug 25, 2018 Lotz Rd. - Lower Rouge																							Total Number of Fish			
Temp. 20° C.	21 Seine Hauls - 1 Hour																									
Species	Size Class cm																									
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	~	13	14	15	17	18	20	
Central Stoneroller					1	1																				2
Common Shiner				1	1		1					1								2						6
Mimic Shiner				1	2																					3
Fathead Minnow					6	6	2																			14
Creek Chub				2	1	2	6	2	1		1	1	2		1		1	1				1	1		1	24
White Sucker						1	8	4	1												1					15
Northern Hogsucker																								1		1
Central Mudminnow			1																							1
Green Sunfish	1		1		1	1		3																		7
Pumpkinseed			1				1																			2
Bluegill	11	3	1		2								1				1									19
Johnny Darter		6	2	6	2	3	1	1																		21
Blackside Darter			1		1							1														3
Round Goby	23	6	6	1	4		4	2	7	4	3	3	1													64
<b>Total Fishes Sampled</b>																						<b>171</b>				

Low7 Aug. 25, 2018 RR Tracks - Lower Rouge																							Total Number of Fish		
Temp. 20° C.	20 Seine Hauls - 0.75 Hours																								
Species	Size Class cm																								
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	~	13	16	19		
Central Stoneroller			1																						1
Common Shiner			1		6	2										2.0	2	2	2			1			18
Emerald Shiner											1	1													2
Mimic Shiner				1	9	1																			11
Fathead Minnow	1	1		2	8	1																			13
Creek Chub						1	1					1			2		1								6
White Sucker				1		2	1	1														1	1		7
Northern Hogsucker																						1		1	2
Rainbow Trout										1															1
Green Sunfish					1	2		1																	4
Bluegill	1	1																							2
Johnny Darter		1			1																				2
Blackside Darter						2	3			1															6
Round Goby	13	9	8	2	1	3	12	9	10	7	6														80
<b>Total Fishes Sampled</b>																							<b>123</b>		

LR-10 Sept. 14, 2018 Inkster Rd. - Lower Rouge																							Total Number of Fish	
Temp. 20° C.	23 Seine Hauls - 50 Minutes																							
Species	Size Class cm																							
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	~	12	13	15	16		
Gizzard Shad														2										2
Central Stoneroller										1														1
Spotfin Shiner					1	2		6	3		1													13
Common Shiner		1	1	1			1	3	1				1		2		1				1			13
Emerald Shiner						1					2													3
Mimic Shiner				1	9	5	6																	21
Fathead Minnow					2	1		1																4
Blacknose Dace								1																1
Creek Chub														2	1	2	1	1		1	2		1	11
White Sucker									1		2				1	1	1		1					6
Pumpkinseed															1	1								2
Largemouth Bass															1									1
Yellow Perch																						1		1
Blackside Darter								1																1
Round Goby	27	20	10	6	6	8	9	7	6	6	3		2											110
<b>Total Fishes Sampled</b>																						<b>158</b>		

LR-11 Sept. 14, 2018 Brady St. - Lower Rouge																						Total Number of Fish
Temp. 20° C.	21 Seine Hauls - 30 Minutes																					
Species	Size Class cm																					
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	~	16	15	17	
Spotfin Shiner					1		4	1	2	2												10
Common Shiner				1	3	3	3	2												1		13
Emerald Shiner					1				4	6	9	5			1							26
Mimic Shiner	1		3	6	14	8	10															42
Bluntnose Minnow					1	1		2	1		2											7
Fathead Minnow		1		4	2				2													9
Creek Chub							2	1			1											4
White Sucker								1			1									1		3
Brook Silverside											2	3										5
Smallmouth Bass								1														1
Largemouth Bass					1					1	1	1	1	1								6
Johnny Darter						4	2	2														8
Northern Logperch										1	1				1							3
Round Goby	13	14	9	11	6	6	4	9	5	1	6	2	1									87
<b>Total Fishes Sampled</b>																					<b>214</b>	

Main Rouge

Main5 Douglas Evans Sept. 28, 2018 Main Rouge																									Total Number of Fish		
Temp. 13.5° C.	Seine Hauls - 24 - 1 Hour																										
Species	Size Class cm																										
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	~	14	15	17	18	20	
Central Stoneroller						1								2													3
Common Shiner					1		1		1		1		1		1	2	1		1	2		6					18
Bluntnose Minnow			2	3	2	2	2	3	2	3		2	4														25
Fathead Minnow								1																			1
Blacknose Dace						1	1	1																			3
Creek Chub							3						1	1	2				1								8
White Sucker																									2	2	4
Stonecat																								1			1
Rock Bass																						1					1
Pumpkinseed													1			2											3
Bluegill					1			1	1	1	3	1	1		2	1											12
Black Crappie																								1			1
Johnny Darter				4	7	1	3	2																			17
<b>Total Fishes Sampled</b>																								<b>94</b>			

MN-6 7 Mile -Sept 28, 2018 Main Rouge																				Total Number of Fish						
Temp. 14° C.	20 Seine Hauls - 1 Hour																									
Species	Size Class cm																									
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12							
Bluntnose Minnow			2																							2
White Sucker														2				1	1							4
Pumpkinseed													1													1
Bluegill			2																							2
Johnny Darter			1	2	9	14	15	5		1																47
<b>Total Fishes Sampled</b>																			<b>56</b>							

Oakland County Lakes

Simpson Lake Aug 24, 2018 Franklin Creek, Main Rouge																							Total Number of Fish	
Temp. 25.5° C.	13 Seine Hauls - 1 Hour																							
Species	Size Class cm																							
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	~	20		
Tadpole madtom		1							1															2
Grass Pickerel																							1	1
Northern Pike																					1			1
Central Mudminnow		1					1	2		2														6
Rock Bass															1									1
Pumpkinseed												1												1
Bluegill	4	11	13	1	1	1				2	1					1								35
Smallmouth Bass										1														1
Largemouth Bass						1	1	1				1												4
Black Crappie									1	1														2
Iowa Darter			3	1				1																5
Least Darter	8																							8
<b>Total Fishes Sampled</b>																						<b>67</b>		

Walnut Lake Aug 24, 2018 Franklin Creek, Main Rouge																							Total Number of Fish
Temp. 22° C.	28 Seine Hauls - 1 Hour																						
Species	Size Class cm																						
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	
Bluntnose Minnow	3	6	14	26	19	4	3		1														76
Yellow Bullhead						1																	1
Rock Bass				1		1							1										3
Pumpkinseed									1					1								1	3
Bluegill	9	10	25	12	1	2	1			3	1		2					1					67
Smallmouth Bass					1	2	2	1		1	3	1				1							12
Largemouth Bass				1	2	3	3	1	1														11
Iowa Darter		2	1		1																		4
Johnny Darter				2	1	1																	4
Yellow Perch				2	7	4	9	3	2	4	3	7	5	1	3					1		1	52
<b>Total Fishes Sampled</b>																						<b>233</b>	

HamL Aug. 29, 2018 Quarton Branch, Main Rouge																								Total Number of Fish	
Temp. 23° C.	17 Seine Hauls - 70 Minutes																								
Species	Size Class cm																								
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	~	16		
Spotfin Shiner				1	2	1	1	1	1	1															8
Mimic Shiner				3	9	5	2																		19
Bluntnose Minnow	1	3	6	10	6	1	6		1		1	1													36
Yellow Bullhead					1	1	1	1	2		1														7
Central Mudminnow									1																1
Green Sunfish				1	2																				3
Pumpkinseed			2	1			1			1	2		1		1re										8
Bluegill	5	2	13	11	5	7	14	5	16	4	10	2	4	3	2		1	1	1						106
Smallmouth Bass		1	1		13	8	9	2		1			1				1								37
Largemouth Bass						1	1		2				1											1	6
Iowa Darter	4	2	6	7	5																				24
Least Darter	9	6																							15
Yellow Perch			1		4	7	6	4																	22
<b>Total Fishes Sampled</b>																							<b>284</b>		

ULL Aug. 29, 2018 Main Rouge - Upper Long Lake																								Total Number of Fish	
Temp. 26° C.	17 Seine Hauls - 1 Hour																								
Species	Size Class cm																								
	≤ 3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14		
Pugnose Shiner		3	7	2	2																				14
Blackchin Shiner		1	2	8	12	4																			27
Bluntnose Minnow		4	3	1	4	2	2																		16
Central Mudminnow		1					1	1	1																4
Rock Bass						1																1			2
Pumpkinseed					1	1					1	1	1	2			1		1						9
Bluegill	5	7	45	23	18	7	2	1	8	5	10	1	2						1		1				136
Hybrid Sunfish																							1		1
Smallmouth Bass					1	2	1		1																5
Largemouth Bass						2	3	1																	6
Iowa Darter	1	1	1	2																					5
Least Darter	7	1																							8
Yellow Perch			1		1		2	2	6	3						1									16
<b>Total Fishes Sampled</b>																							<b>249</b>		

Wing Lake Sept. 8, 2018 Main Rouge - Wing Lake																												
Temp. 21° C.	21 Seine Hauls - 2 Hours																									Total Number of Fish		
Species	Size Class cm																											
	≤3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	~	16	18	19	21	22	
Mimic Shiner		21	23	26	41	2																						113
Bluntnose Minnow	4	13	34	33	62	30	32	29	29	1																		267
Rock Bass		1	1																									2
Green Sunfish		1	2	3							1																	7
Pumpkinseed					1		2		1	1	2						1		1		1							10
Bluegill	58	58	63	54	63	7	16	8	7	14	15	8	11	8	14	12	4		4									424
Hybrid Sunfish																							1				1	2
Largemouth Bass							4	1	2	1	2	2	4			2												18
Black Crappie																								1		1		2
Iowa Darter		3	15	7	4		1																					30
Yellow Perch						2	5	1			1	1																10
<b>Total Fishes Sampled</b>																									<b>885</b>			

Rare Species – Johnson Creek

John6 Sheldon Rd. 10-9-2018 - Middle Rouge Johnson Creek																						Total Number of Fish	
Temp. 17° C.	20 Seine Hauls - 1 Hour																						
Species	≤ 3	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	
Central Stoneroller									1	1			1										3
Golden Shiner															1	2	3						6
Bluntnose Minnow	27				6	6	1	7	2	3	2		1										28
Blacknose Dace		1	1	3	3	3	1	1	1														14
Creek Chub							3		1		1												5
White Sucker												4			1				1	1			7
Mottled Sculpin	16			3	3	4	2	2	2		2		1										19
Rock Bass						2	1																3
Pumpkinseed									1	2		2				1							6
Bluegill					1	1		4	1	3	1	2	2		2	1			1		1		21
Black Crappie												1	3	1	1								6
Rainbow Darter				1																			1
Johnny Darter	20				2	4	3																9
<b>Total Fishes Sampled</b>																						<b>128</b>	

<b>John RHS Rural Hills Street, 10-9-2018 - Middle Rouge Johnson Creek</b>		<b>Total Number of Fish</b>
<b>Temp. 17° C.</b>	<b>30 SeineHauls - 1.5 Hour</b>	
<b>Species</b>		
<b>Central Stoneroller</b>		<b>2</b>
<b>Golden Shiner</b>		<b>4</b>
<b>Bluntnose Minnow</b>		<b>15</b>
<b>Fathead Minnow</b>		<b>1</b>
<b>Blacknose Dace</b>		<b>11</b>
<b>Creek Chub</b>		<b>12</b>
<b>White Sucker</b>		<b>11</b>
<b>Mottled Sculpin</b>		<b>16</b>
<b>Blue gill</b>		<b>5</b>
<b>Rainbow Darter</b>		<b>4</b>
<b>Johnny Darter</b>		<b>6</b>
<b>Yellow Perch</b>		<b>1</b>
<b>Total Fishes Sampled</b>		<b>88</b>



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# Rouge River Benthic Monitoring Program Spring 2018 Report

This report covers benthic macroinvertebrate monitoring at 46 sites on Rouge River tributaries and branches in the spring of 2018. Friends of the Rouge (FOTR) volunteers and staff sampled twenty-seven sites, Wayne County Department of Public Services Water Quality Management Division sampled fourteen, Sue Thompson sampled three, Schoolcraft College students (not included in

this report) sampled one and Wayne State University's Ecology Class sampled two.

Most of Friends of the Rouge's sites were sampled on April 21 during the Spring Bug Hunt in which

75 people participated. Groups participating in the event were Scout Pack 247, Washtenaw Community College and Wayne State University. A big thank you to Eleanor for coming early to help set up and for providing refreshments. The event was rescheduled from the original April 14 date due to 2 inches of predicted rain. The flooding that resulted from the April 14 rain had receded by April 21 but the extreme ups and downs washed many macroinvertebrates downstream.

**FRIENDS OF THE ROUGE BENTHIC MONITORING PROGRAM**  
 FOTR's benthic monitoring program was started in 2001 to involve a large number of volunteers in monitoring the health of the watershed by sampling the creeks of the Rouge River. The types and number of benthic macroinvertebrates found can be used to assess water quality. Each team of volunteers samples two sites under the direction of a trained team leader. Samples of each organism are collected and field identifications are verified in the lab. The program is funded by the Alliance of Rouge Communities and in cooperation with Wayne County Department of Public Services Water Quality Management Division.

### Stream Quality Index, Taxa, EPT and Sensitive Families

Each site is given a **Stream Quality Index (SQI)** which is determined by weighting each type and number of organisms found by their sensitivity ratings. A higher proportion of sensitive organisms such as mayflies and caddisflies results in a higher score. A number of different organisms also results in a high score. The SQI is then given a rating:

- >48 = EXCELLENT
- 34-48 = GOOD
- 19-33 = FAIR
- <19 = POOR

Number of **taxa** represents the number of different families of organisms. A higher number of taxa indicate a healthier site.

**EPT** refers to the number of mayfly, caddisfly and stonefly families found; these three orders contain some of the most sensitive organisms.

**Sensitive Families** refers to insects that are rated 1 on the Hilsenhoff Sensitivity Index.

### Overall Scores

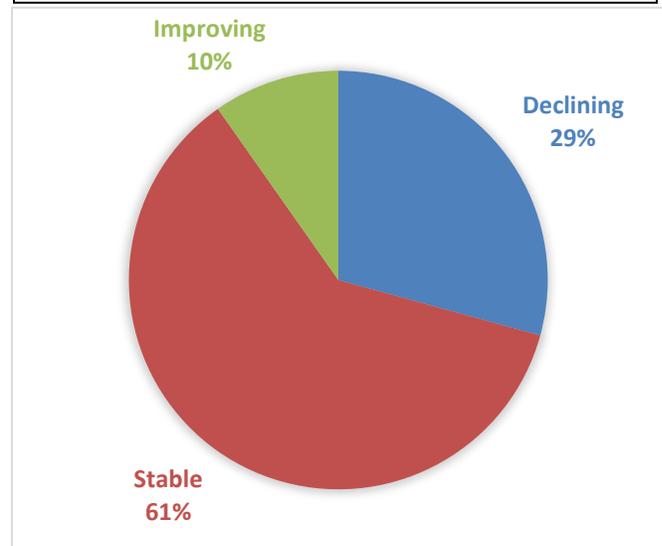
Half of the sites (24/46 or 52%) had FAIR Stream Quality Index scores (SQI) with an average score of 26 (Table 3). Thirteen sites rated GOOD and nine sites had POOR scores. There were no EXCELLENT scores. The number of taxa at each site ranged from a low of five to a high of 22 at one Johnson Creek site (MR-27). The number of EPT (see sidebar) ranged from zero to seven. The site with seven was (MR-27), a Johnson Creek tributary. Ten sites had sensitive families (see Table 3), including Capniidae, Glossosomatidae, Gomphidae, Corydalidae, Leptophlebiidae, Perlodidae, Psychomyiidae and Rhyacophilidae.

### Data Trends

For the forty-one sites that had three years or more of past data, we compared the spring 2018 scores to the average for the site. Of those, twelve sites (29%) scored below a standard deviation of the mean, four (10%) were above and thirty (61%) were stable (Chart 1). The percentage of declining sites is higher than in past springs. In comparison, the Spring Bug Hunt 2017 Report had only 9% of sites declining, 3% improving and 88% stable.

To compare trends over time, we analyzed the trends in SQIs over time (Table 1, p. 8-12).

**Chart 1: Trends for Sites with Past Data**



**Trend Analysis**

To determine whether the Rouge River is improving over time, SQI scores are averaged for each subwatershed and Johnson Creek (a cold water tributary) and the slope is plotted. A positive slope indicates an upward trend (scores increasing); a negative slope indicates a downward trend (scores decreasing). The trend is significant if the *p*-value is less than 0.05.

Table 1 contains the data trends by subwatershed/creek. The Middle 1 and the Middle 3 subwatersheds are showing significant positive trends. No other subwatershed had significant trends.

Table 1: FOTR and WC Spring Bug Hunt Summary 2001-2018

Branch	slope	p-value	True trend	Subwatershed average score	Water Quality Rating
Lower 1	0.0512	0.7447	no trend	30	Fair
Lower 2	-0.0909	0.6792	no trend	26	Fair
Main 1-2	0.1167	0.3479	no trend	27	Fair
Johnson Creek	0.3546	0.0631	no trend	39	Good
Middle 1	0.8308	0.000085	yes, positive	30	Fair
Middle 3	0.7033	0.0043	yes, positive	21	Fair
Upper	-0.1028	0.4451	no trend	24	Fair

In addition to the trend analysis by subwatershed, a site-by-site analysis of all the sites was done (Table 2). Three sites had significant trends. John5 on the Johnson Creek had a positive trend. Nott, a tributary to the Main Rouge and LR-12 on the Lower Rouge both had negative trends.

Table 2: FOTR and WC Spring Bug Hunt Trends by site 2001-2018

Site	p-value	Slope	True trend	Site average score	Water Quality Rating
Nott	0.0488	-0.6849	yes, negative	24	Fair
John5	0.0132	1.0889	yes, positive	30	Fair
LR-12	0.0427	-1.3792	yes, negative	30	Fair

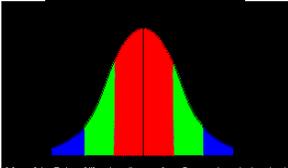
## Lower Branch

Fourteen sites were sampled on the Lower Branch of the Rouge (see Table 3). Fellows Creek was sampled at three locations (Fel2, Fel4, and Fel6) and Fowler Creek at two locations (Fowl1 and Fowl2). On the main branch of the Lower, nine sites were sampled.

Most of the Lower sites scored FAIR (average 26). Three sites had GOOD scores (LR-8, Fel6, Low2), nine scored FAIR, and two scored POOR (LR-6, LR-12). The number of taxa ranged from 5-16. Three sensitive families were found: Prongill (*Leptophlebiidae*) mayflies (Fel6), Perlodid (*Perlodidae*) stoneflies (Fel6 & Fowl1) and Free-living (*Rhyacophilida*) caddisflies (Fowl1 & LR-8).

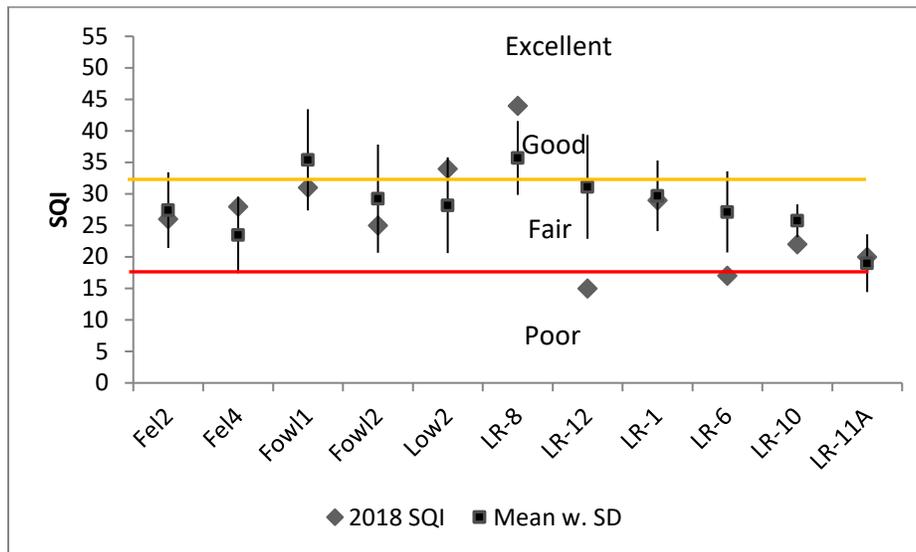
The Lower1 and Lower 2 subwatersheds did not have significant trends though the slope was positive for the Lower 1 and negative for the Lower 2 (Table 1, graphs p. 8-9). Eleven sites had past data for three years or more (Chart 1). One (LR-8) was above a standard deviation of the mean and three were below. The three that were below (LR-12, LR-6, and LR-10) were all downstream of the Ypsilanti wastewater treatment plant (YCUA) discharge that was shut off from Sept. 5, 2017 - Jan. 8, 2018 (see 2017 Fall Bug Hunt Report). LR-12 showed a declining trend when analyzed by site (Table 2). It is also located downstream of the outfall.

**Standard Deviation**



Some sites have consistent scores where others vary greatly year to year. Standard deviation is a measure of how spread out your data is. 68% of your data will fall within one standard deviation of the mean (red areas shown above). On Charts 1-4, one standard deviation is represented by the vertical lines for each site. Standard deviation helps us to determine whether the current score is within normal for the site.

**Chart 1: Lower Branch SQI and Mean with Standard Deviation**



To examine the effect of the YCUA discharge shutoff, we analyzed the trends for sites upstream and downstream of the outfall as well as the two tributaries (Fellows and Fowler Creeks) separately (Table 4). There were no significant trends but the sites downstream of the outfall did show a negative trend, as did Fowler Creek

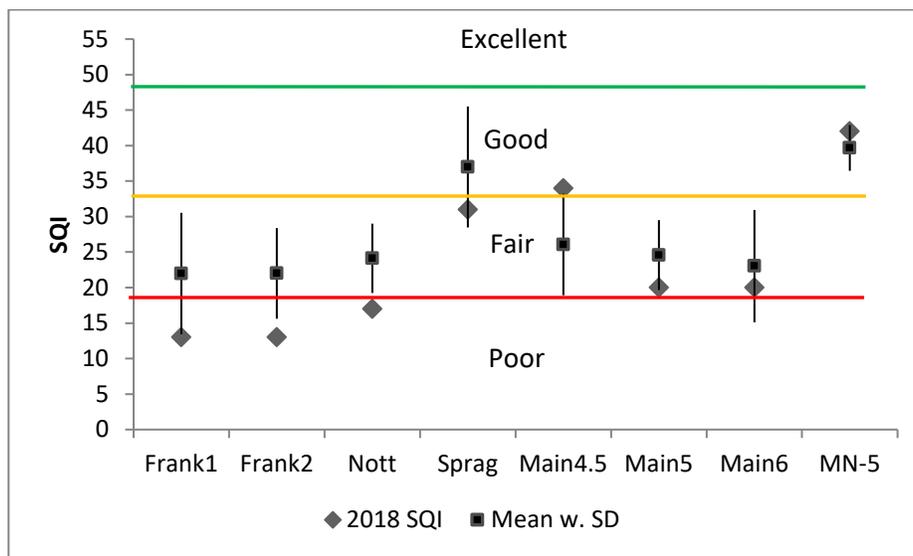
Branch	slope	p-value	True trend	Average	Water Quality Rating
Lower Rouge Branch (no tributaries)	-0.0477	0.7975	no trend	28	Fair
Lower Rouge Branch upstream of YCUA	0.3300	0.3589	no trend	32	Fair
Lower Branch downstream of YCUA	-0.1432	0.4978	no trend	27	Fair
Fowler Creek	-0.0613	0.8674	no trend	33	Fair
Fellows Creek	0.1702	0.4540	no trend	29	Fair

## Main Branch

Eight sites on the Main Branch were sampled. Four were on tributaries: Franklin (Frank1, Frank2), Nottingham (Nott) and Sprague (Sprag). Two scored GOOD, three FAIR and three POOR. The number of taxa ranged from 4-14. Sensitive families Dobsonflies (Corydalidae) and Clubtail dragonflies (Gomphidae) were found in Sprague Creek in Troy (Sprag).

The Main 1/2 subwatershed did not show any trend (Table 1, graph p. 10) though it had a positive slope. For the eight sites with three years or more of past data (Chart 2), one was above a standard deviation of the mean (Main4.5) and three were below (Frank1, Frank2, Nott). When analyzed by site, Nott had a significant negative trend (Table 2). There was a large construction project at the site around the time of sampling.

**Chart 2: Main Branch & Tributary SQI and Mean with Standard Deviation**

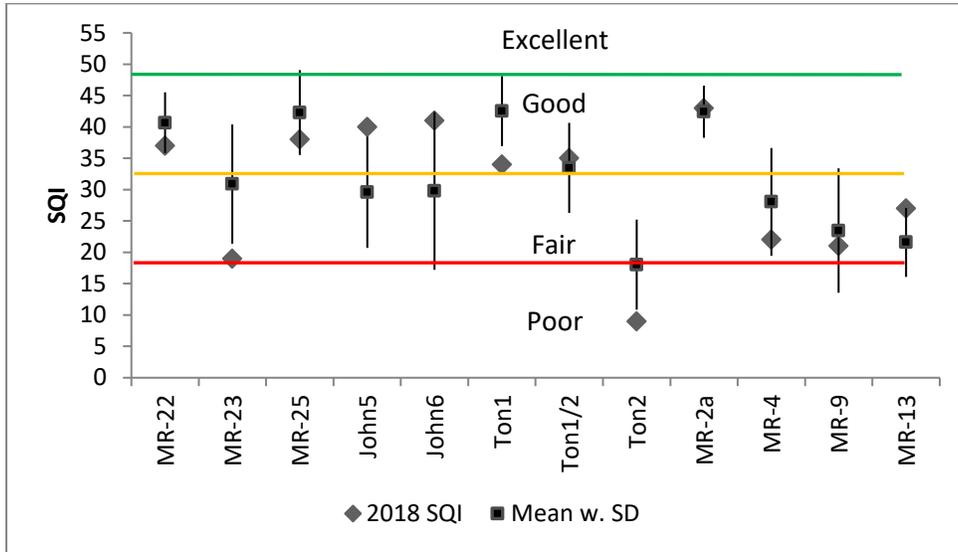


## Middle Branch

Fourteen sites were sampled on the Middle branch including two tributaries: Johnson and Tonquish Creeks. The average score for the Middle Branch was FAIR (31). There were eight sites that scored GOOD, five FAIR and one POOR. The number of taxa ranged from 5-22. Sensitive families were found in most of the Johnson Creek sites. Sensitive families included Perlodid (Perlodidae) stoneflies (MR-22, MR-25, MR-27), pronggill (Leptophlebiidae) mayflies (MR-27), saddle-case maker caddisflies (Glossosomatidae) at John5 and net-tube caddisflies (Psychomyiidae) at John6.

Average scores for the Middle1 and the Middle3 subwatersheds had significant positive trends (Table 1, graphs p. 10-11). For the thirteen sites with past data (Chart 3), one site SQI was above a standard deviation (John5) and three site SQIs were below (MR-23, Ton1, Ton2). When analyzed by site, John5 had a significant positive trend (Table 2).

**Chart 3: Middle Branch & Tributary SQI and Mean with Standard Deviation**

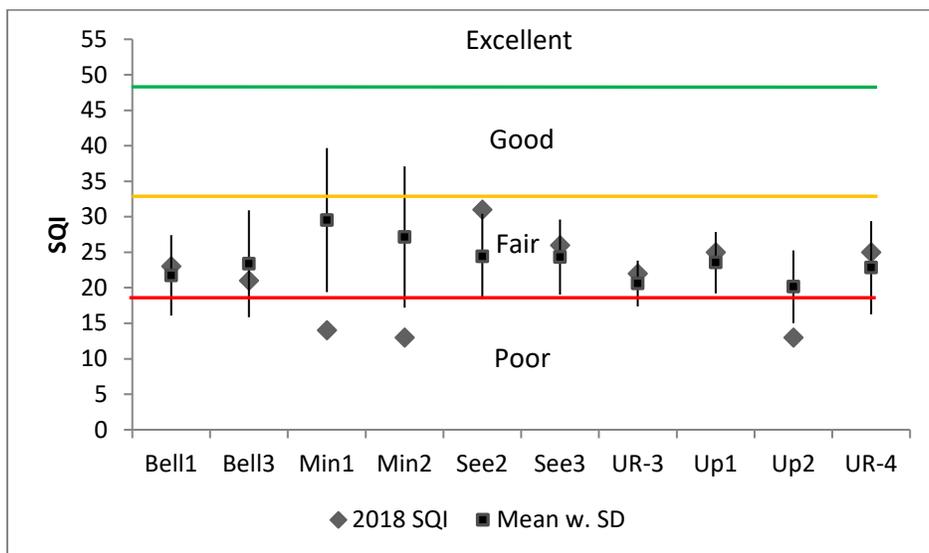


### Upper Branch

Ten Upper branch sites were sampled this spring, including four tributaries: Bell, Minnow Pond, Tarabusi and Seeley Creeks. Three Upper branch sites were sampled. The average score for the Upper branch was 21 with seven sites scoring FAIR and three scoring POOR. The number of taxa ranged from 5-11 and EPT 0-2. Capnid stoneflies were found at Up1. They were found there for the first time in many years during the 2018 Stonefly Search and it is a good sign to have them surviving into the spring.

The Upper Subwatershed did not show any overall trend though the slope was negative (Table 1, graphs p. 11). For the ten sites with past data (Chart 4), one site was above a standard deviation of the mean (See2) and three were below (Min1, Min2, Up2). When analyzed by site, no sites had any significant trends (Table 2).

**Chart 4: Upper Branch SQI with Mean and Standard Deviation**



# 2018 Spring Bug Hunt

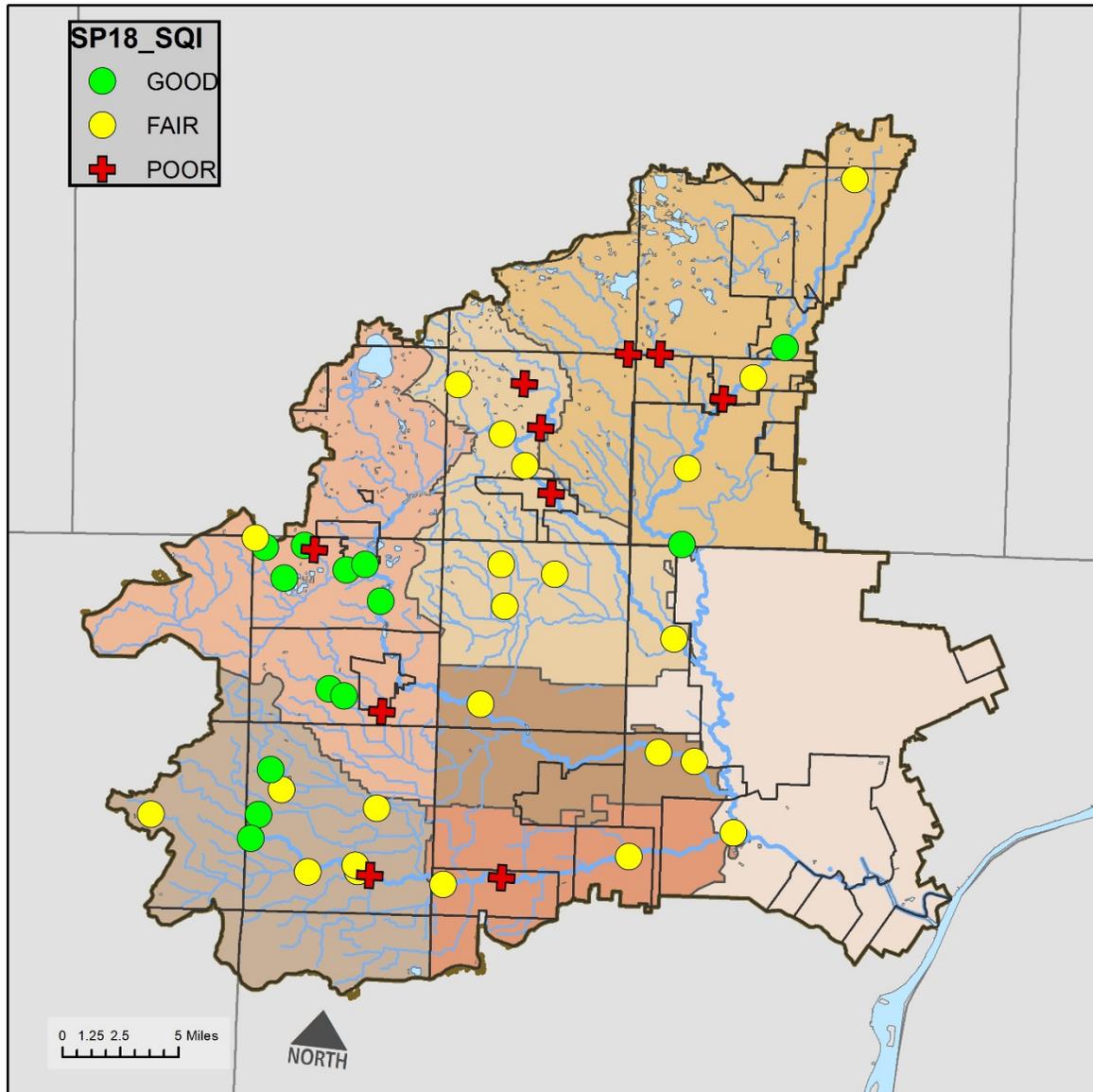


Table 3: Sites and Scores

Branch	Stream Name	FIELDID	Site Description	Sampling Roads	Org	SQI	Score	Taxa	EPT	Sens Fam	Sensitive Family1	Sensitive Family2
Lower	Fellows Creek	Fel2	Vintage Valley	Ford/Ridge	13	26	FAIR	11	1	0		
Lower	Fellows Creek	Fel4	Flodin Pk	Saltz Rd/Sheldon	WC	28	FAIR	11	1	0		
Lower	Fellows Creek	Fel6	Hanford	west of Ridge	13	40	GOOD	13	4	2	Perlodidae	Leptophlebiidae
Lower	Fowler Creek	Fowl1	Prospect	Prospect/Cherry Hill	1	31	FAIR	13	4	2	Perlodidae	Rhyacophilidae
Lower	Fowler Creek	Fowl2	Fowler Beck	Beck, N of Geddes	1	25	FAIR	8	2	0		
Lower	Lower Rouge	Low2	Cherry Hill	Cherry Hill/Ridge	12	34	GOOD	13	0	0		
Lower	Lower Rouge	LR-8	Ridge Proctor	Ridge & Proctor	12	44	GOOD	16	4	1	Rhyacophilidae	
Lower	Lower Rouge	LR-12	Morton Taylor	N of Michigan Ave	WC	15	POOR	6	1	0		
Lower	Lower Rouge	Low4	Sheldon Rd	N of Michigan	WC	19	FAIR	8	1	0		
Lower	Lower Rouge	Low12	Canton Trails Day	east of Sheldon site	FOTR	22	FAIR	7	1	0		
Lower	Lower Rouge	LR-1	Commerce Ct	Michigan Ave, WCDOE Office	WC	29	FAIR	12	1	0		
Lower	Lower Rouge	LR-6	Wayne WDM	Wayne Rd W	WC	17	POOR	7	2	0		
Lower	Lower Rouge	LR-10	Inkster	John Daly N of Michigan	WC	22	FAIR	8	2	0		
Lower	Lower Rouge	LR-11A	Ford Field east	east of Ford Field	WC	20	FAIR	9	1	0		
Main	Franklin Creek	Frank1	Franklin Cider Mill	14 Mile/Franklin Rd	5	13	POOR	5	0	0		
Main	Franklin Creek	Frank2	Ink Pump Sta	Inkster & Farmington	5	13	POOR	5	1	0		
Main	Nottingham Creek	Nott	Country Day	Lahser/13 Mile	8	17	POOR	7	1	0		
Main	Sprague Creek	Sprag	Main Lloyd Stage	6685 Coolidge	T	31	FAIR	13	4	2	Gomphidae	Corydalidae
Main	Main Rouge	Main4.5	Fairway Pk	Lincoln/Southfield	9	34	GOOD	13	2	0		
Main	Main Rouge	Main5	Douglas Evans	Evergreen/13 Mile	9	20	FAIR	8	1	0		
Main	Main Rouge	Main6	Sfld Civic Ctr	Civic Center Dr/Telegraph	8	20	FAIR	7	1	0		
Main	Main Rouge	MN-5	Bridge St	Bridge w of Telegraph	WC	42	GOOD	14	2	0		
Middle	Johnson Creek	MR-22	Maybury south	7 Mile N & Napier	ST	37	GOOD	18	4	1	Perlodidae	
Middle	Johnson Creek	MR-23	Maybury north	8 Mile	WSU	19	FAIR	9	0	0		
Middle	Johnson Creek	MR-25	Maybury East	Beck/Main St	WSU	38	GOOD	15	5	1	Perlodidae	
Middle	Johnson Creek	MR-26	Napier Rd	Eight Mile	ST	30	FAIR	12	2	0		
Middle	Johnson Creek	MR-27	Ridge	Ridge S of 7 Mile	ST	46	GOOD	22	7	2	Perlodidae	Leptophlebiidae
Middle	Johnson Creek	John5	Fish Hatchery Pk	7 Mile/Sheldon	2	40	GOOD	14	4	1	Glossosomatidae	
Middle	Johnson Creek	John6	Hines	Hines/Sheldon	2	41	GOOD	16	4	1	Psychomyiidae	
Middle	Tonquish Creek	Ton1	Plym Twp Pk	Beck/Ann Arbor Tr	T	34	GOOD	13	3	0		
Middle	Tonquish Creek	Ton1/2	Canton Ctr Rd	N of Ann Arbor Rd	3	35	GOOD	13	2	0		
Middle	Tonquish Creek	Ton2	Ann Arbor Rd	Ann Arbor Rd/Lilley	3	9	POOR	5	0	0		
Middle	Middle Rouge	MR-2a	Reservoir Rd W	S of 6 Mile, E of Hines	WC	43	GOOD	16	3	0		
Middle	Middle Rouge	MR-4	Levan Knoll	W of Levan Knoll, S of Hines	WC	22	FAIR	10	2	0		
Middle	Middle Rouge	MR-9	Wallaceville	E of Beech Daly	WC	21	FAIR	8	1	0		
Middle	Middle Rouge	MR-13	Warrendale	Hines/Warren	WC	27	FAIR	10	2	0		
Upper	Bell Branch	Bell1	Bicentennial Park	7 Mile/Newburgh Rd	11	23	FAIR	8	1	0		
Upper	Bell Branch	Bell3	Livonia 6 Mile	6 Mile/Farmington	11	21	FAIR	11	1	0		
Upper	Minnow Pond	Min1	Minnow 13 M	13 Mile/Farmington	10	14	POOR	7	0	0		
Upper	Minnow Pond	Min2	OCC	Farmington Rd	10	13	POOR	5	1	0		
Upper	Seeley Creek	See2	Sleepy Hollow	Drake/11 Mile	6	31	FAIR	11	2	0		
Upper	Seeley Creek	See3	Kennedy Ct	Kennedy Court	6	26	FAIR	11	1	0		
Upper	Tarabusi Creek	UR-3	Tara 7 M	7 Mile/Merriman	WC	22	FAIR	8	2	0		
Upper	Upper Rouge	Up1	Heritage Park	Farmington/10 Mile	7	25	FAIR	9	2	1	Capniidae	
Upper	Upper Rouge	Up2	Shiawasee Park	Shiawasee/Power	7	13	POOR	6	1	0		
Upper	Upper Rouge	UR-4	5M Beech Daly	east of Inkster	WC	25	FAIR	10	1	0		

Thank you to all the **volunteers** and **Team Leaders, Wayne County** for sampling and providing data for fourteen sites and doing the trend analysis, **Bruce McCulloch** for graphing data and advising us, **University of Michigan-Dearborn** for providing the meeting place for the Spring Bug Hunt and a lab for identification night, **Sue Thompson** for sampling additional sites, **Wayne State University** students for sampling two sites, **Diane O'Connell** and **Schoolcraft College** students for sampling one site and **Daisy Lovain** for running registration.

This program is supported by the Erb Family Foundation, DTE Energy, Washtenaw County Water Resources, Waste Management, Inc. and individual donations.

## Fall Bug Hunt

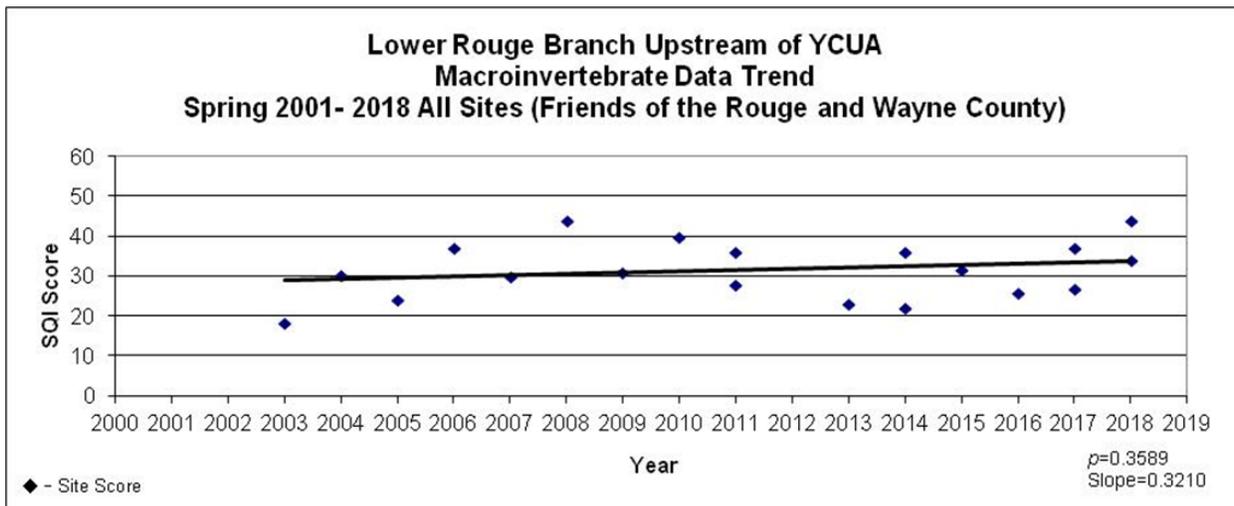
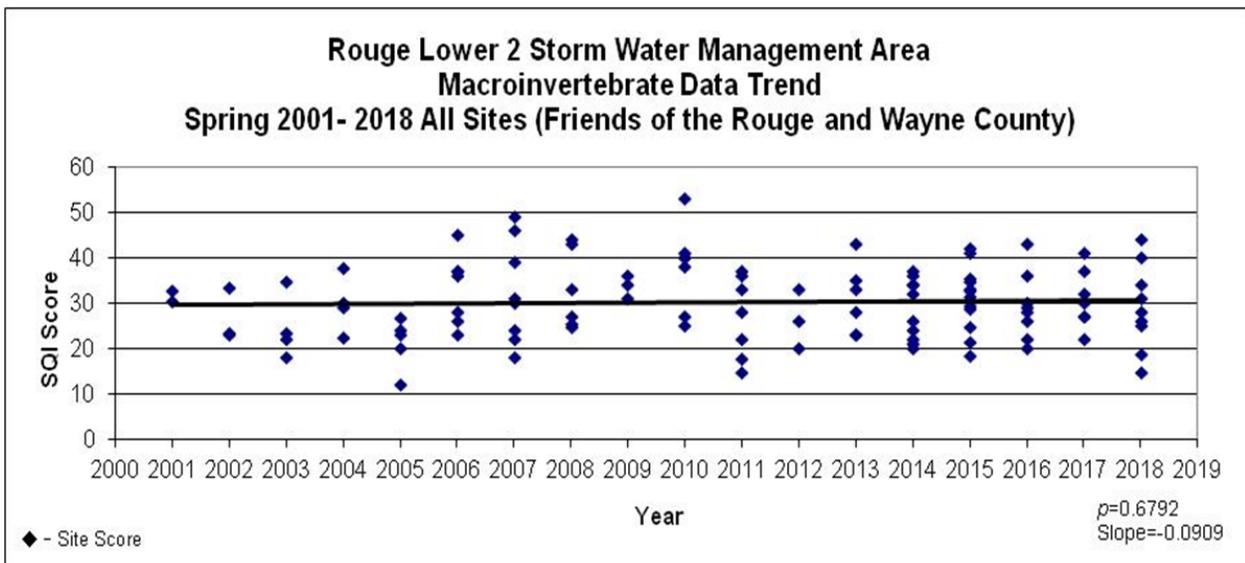
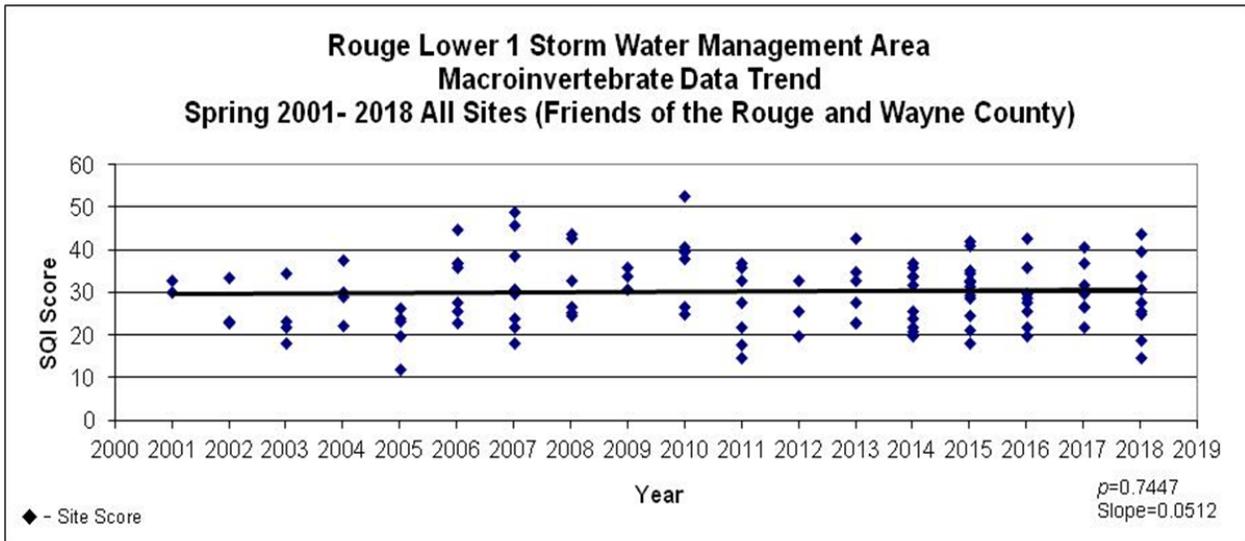
### Oct. 13, 2018 9am-4pm

#### Schoolcraft College VisTaTech Center

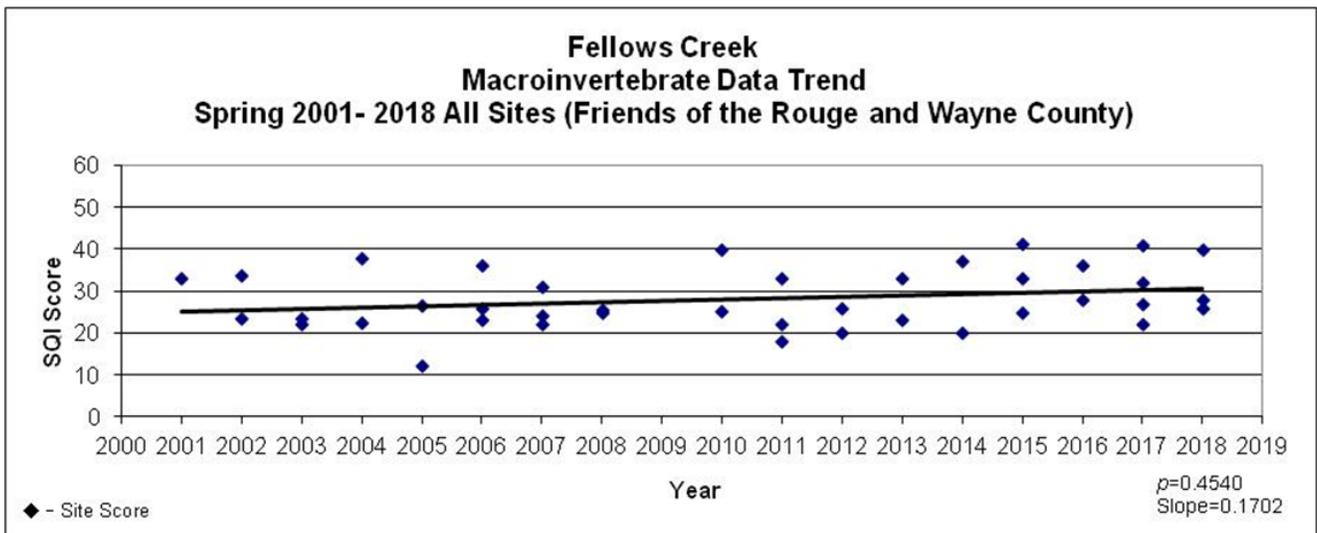
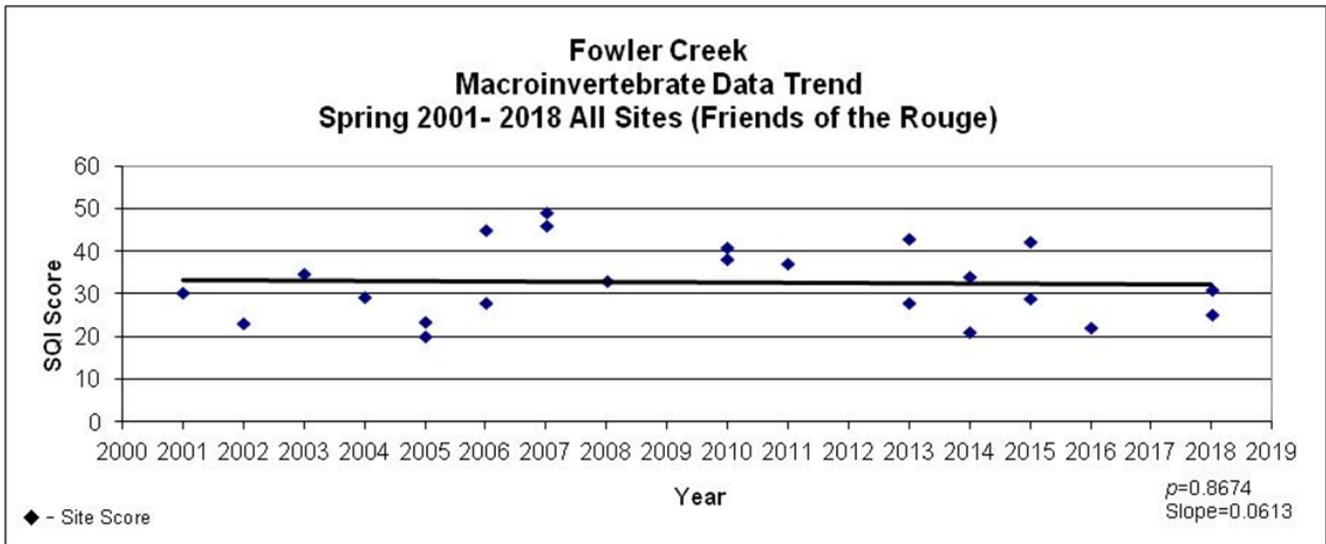
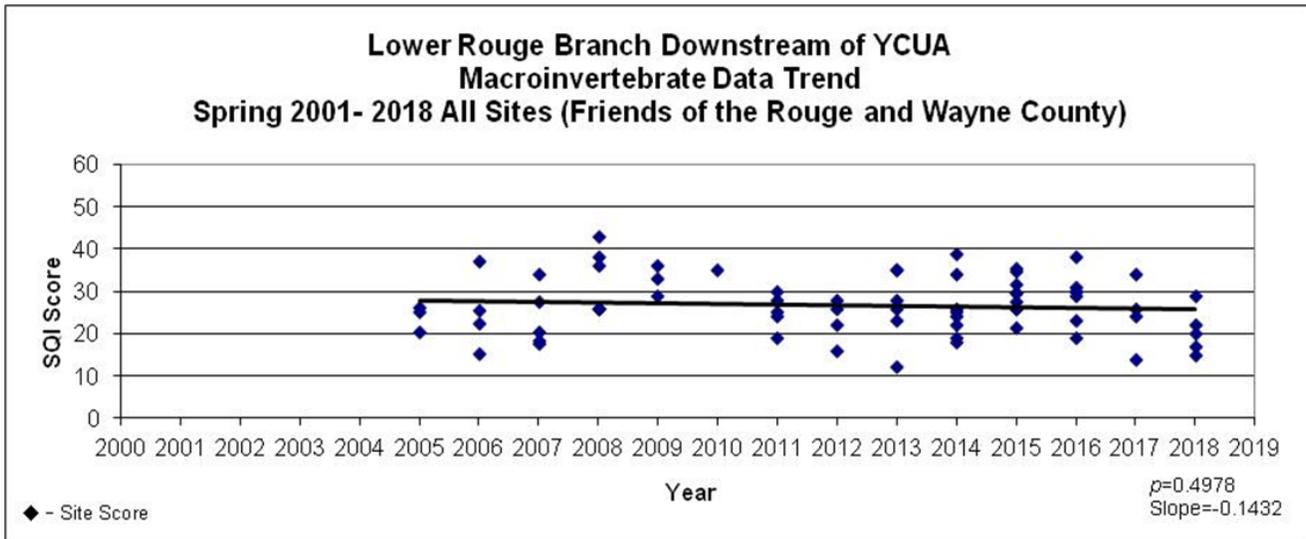
Sign up online today (deadline Sept. 28, 2018 at [www.therouge.org](http://www.therouge.org))

Team Leader Training – Sat. Sept. 29, 2018 9am-2pm (must have participated in a previous event)

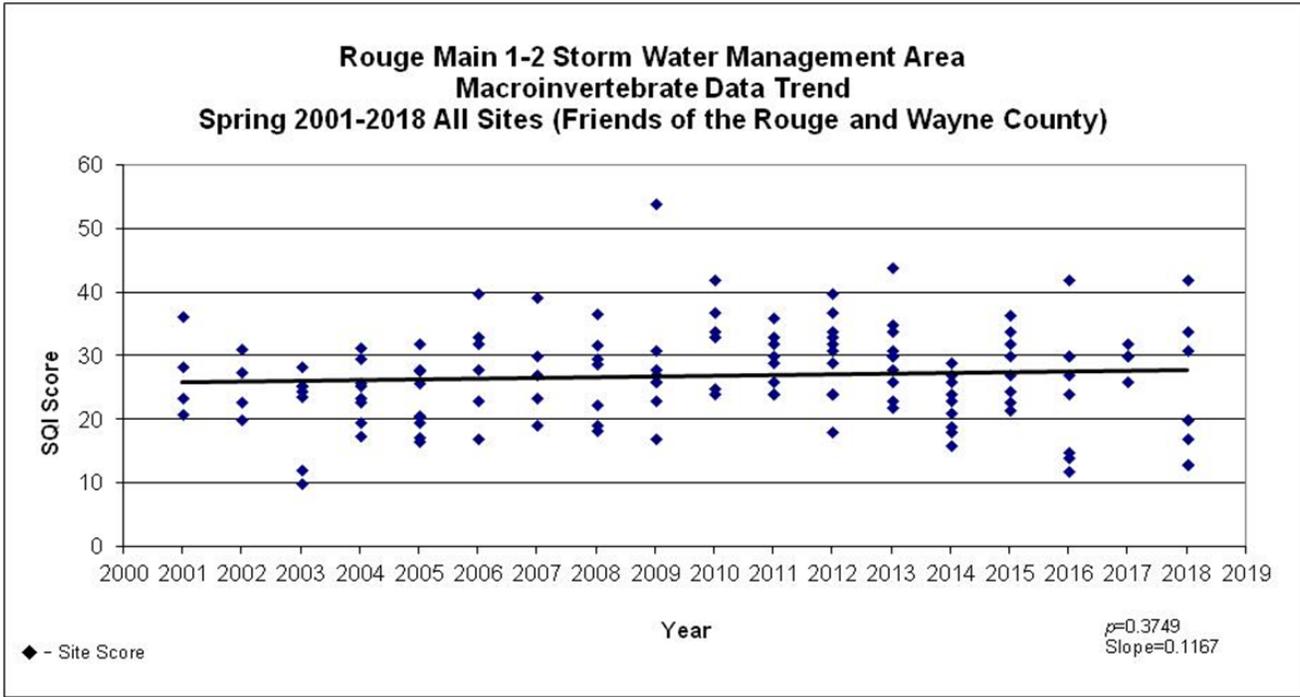
## Lower Branch



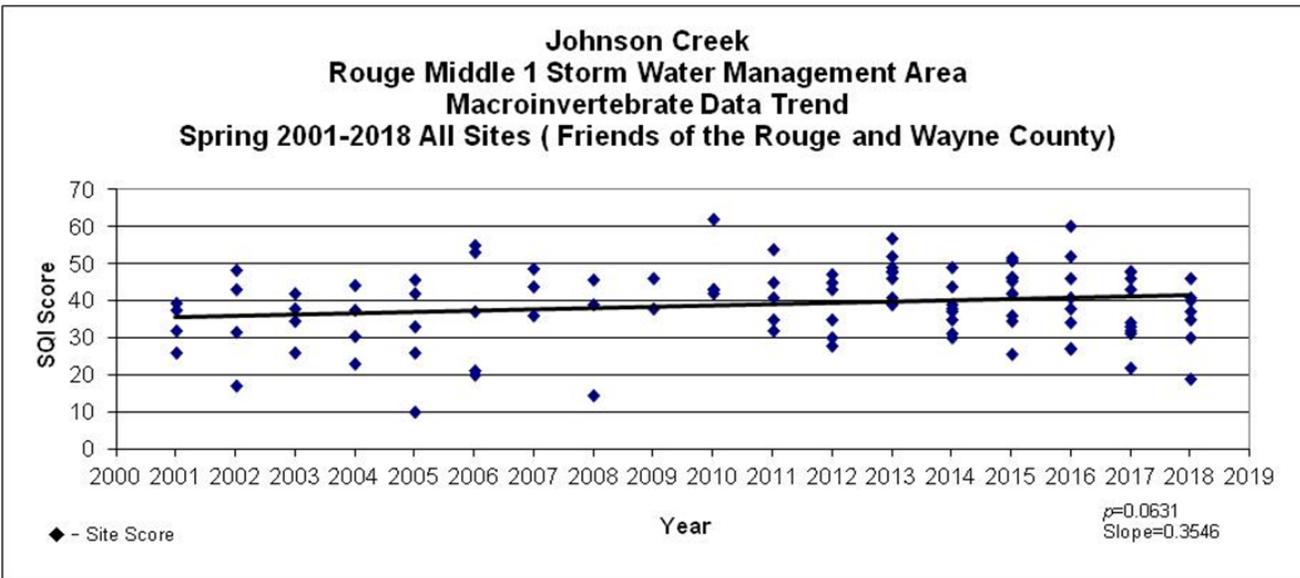
## Lower Branch



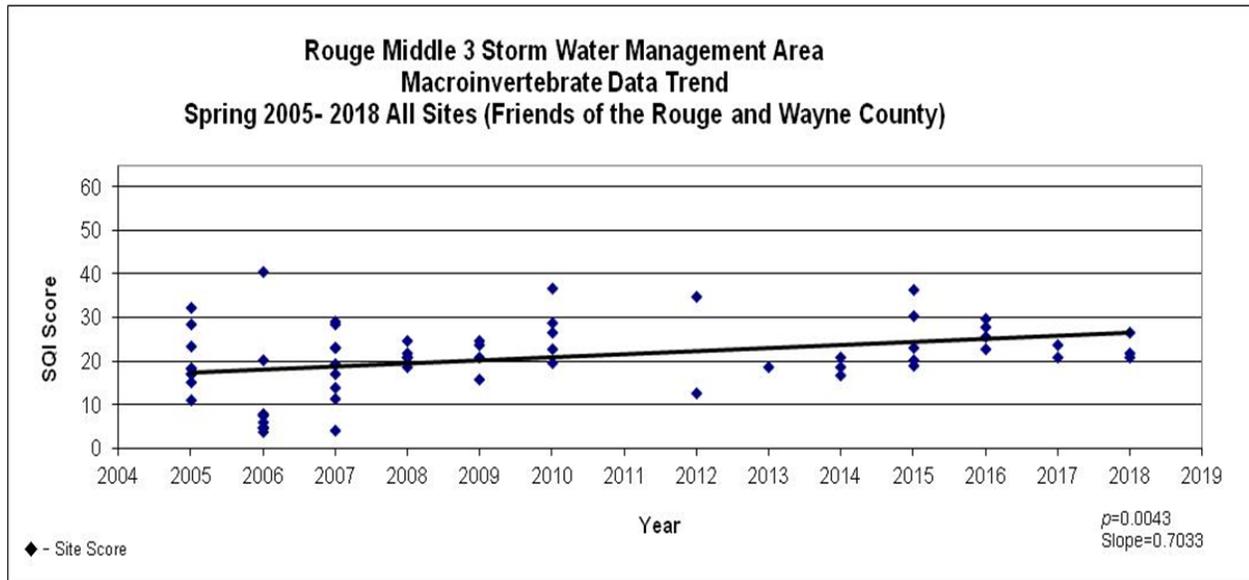
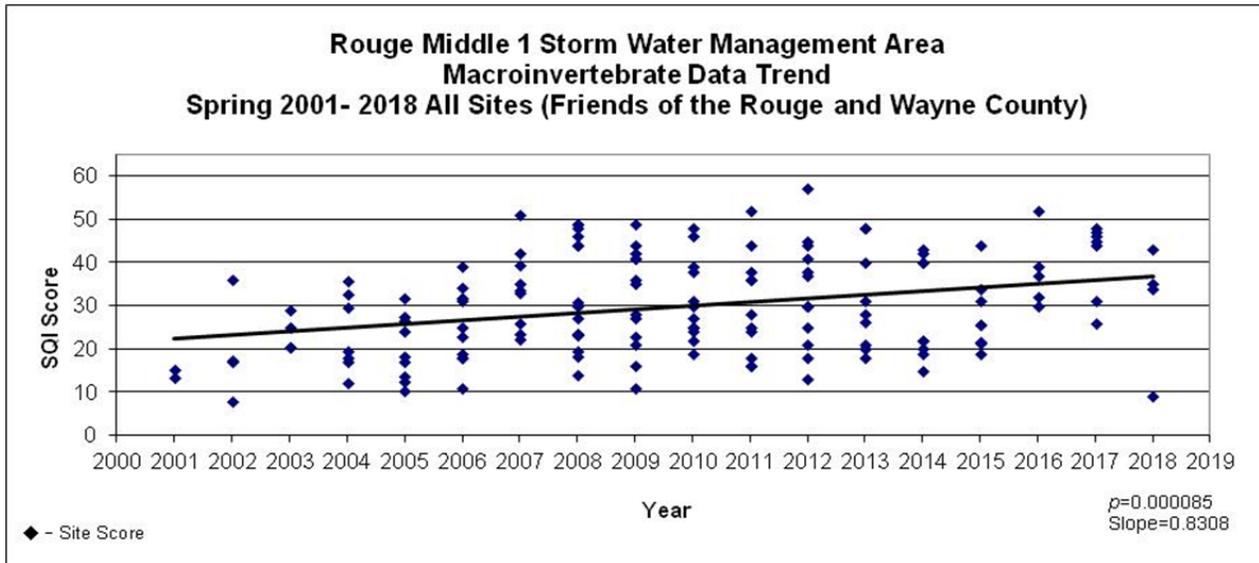
### Main Branch



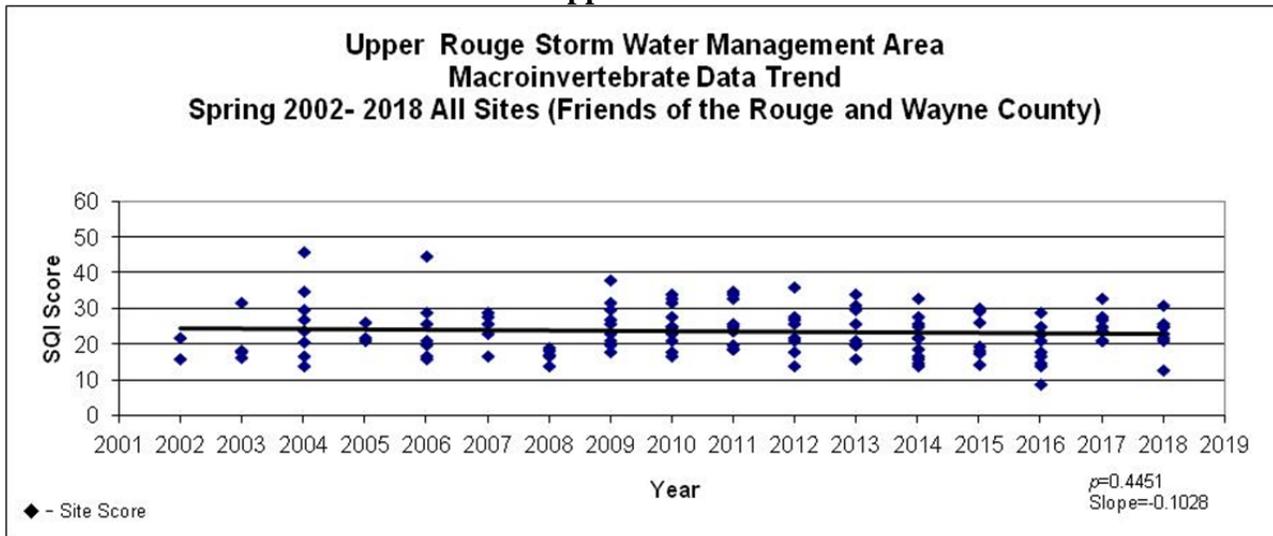
### Middle Branch



## Middle Branch



## Upper Branch





[www.therouge.org](http://www.therouge.org)  
 4901 Evergreen Road, KM  
 Dearborn, MI 48128  
 (313) 792-9621

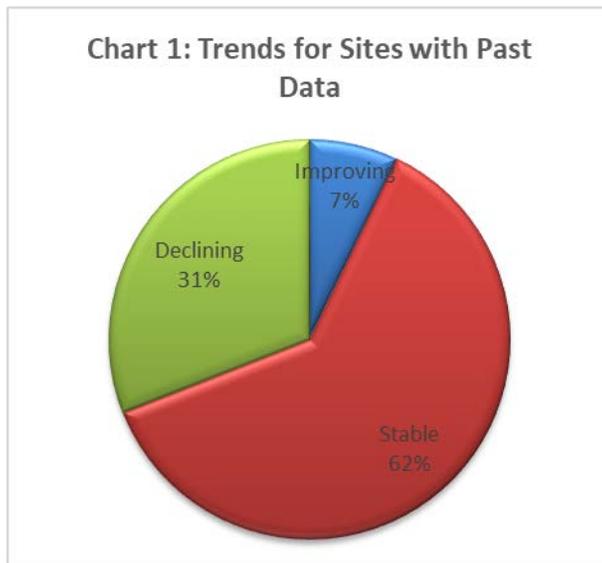
## Rouge River Benthic Macroinvertebrate Monitoring Program Fall 2018 Report

This report contains benthic macroinvertebrate sampling results from 42 Rouge tributary and river sites. The Fall Bug Hunt on October 13, 2018 had 89 attendees that sampled 22 sites in 11 teams. Groups participating included Wayne State University, 4H Critter Science Investigators, and a new team from Plymouth Canton Community Schools. The Schoolcraft College Geography Department once again

provided the meeting space and refreshments and volunteer Daisy Lovain ran the registration with assistance from Schoolcraft Ambassador Max Baker.

This report includes data from additional FOTR sampling, one site sampled by Schoolcraft College students, four sites sampled by Sue Thompson and fourteen sites sampled by Wayne County DPS.

### Overall Scores



Of the 42 sites sampled this fall, the average Stream Quality Index (SQI) was FAIR (26) (map p.6, Table 1 & 4). Sites averaged 11 taxa. For the third year in a row, no sites had EXCELLENT Stream Quality Index Scores. Eight sites were GOOD; 26 sites were FAIR and eight sites scored POOR. The number of taxa found at sites was highest at MR-2a and John3 (20) and lowest at five sites on the Lower branch (5).

#### Understanding Benthic Scores

Each site is given a **Stream Quality Index (SQI)** which is determined by weighting each type and number of organisms found by their sensitivity ratings. A higher proportion of sensitive organisms such as mayflies and caddisflies results in a higher **SQI**. A greater number of different organisms also results in a high **SQI**. The **SQI** has four different levels: >48=**EXCELLENT**, 34-48=**GOOD**, 19-33=**FAIR**, <19=**POOR**.

**Number of taxa** represents the number of different families of organisms. Like SQI, a higher number of taxa indicate a healthier site.

**Number of insect taxa** – insects are more sensitive than the non-insect taxa.

**EPT** refers to the number of mayfly, caddisfly and stonefly families found; these three orders contain some of the most sensitive organisms.

**Number of sensitive families** refers to the number of families of insects that rate very sensitive on the Hilsenhoff Biotic Index.

**Table 1: Averages**

Average SQI	Average # of taxa	Average # EPT	Average # Sensitive Families
26	11	1.8	0

Some mayfly, stonefly and caddisfly families (EPT) were found at all but four sites with an average of 1.8 of these families per site. Three sites had the highest number of EPT (5) – John7, John8 and MR-2a. Only one site had a sensitive family: dobsonflies were found at MN-5.

### Data Trends

For the forty-two sites that had three or more years of past data, 62% were stable, 7% were improving and 31% were declining (Chart 1). Compared to last fall, a higher percentage of sites are declining (26% in 2017), and fewer are stable (67% in 2017).

To compare change over time, we analyzed the trends (Table 2 and Figures 1-8). The Middle 3 subwatershed and Johnson Creek had significant positive trends. The Main 1-2, the Upper and the Lower 1 Branch had significant negative trends.

**Table 2: Fall Bug Hunt Trend Summary All Sites 2001-2018**

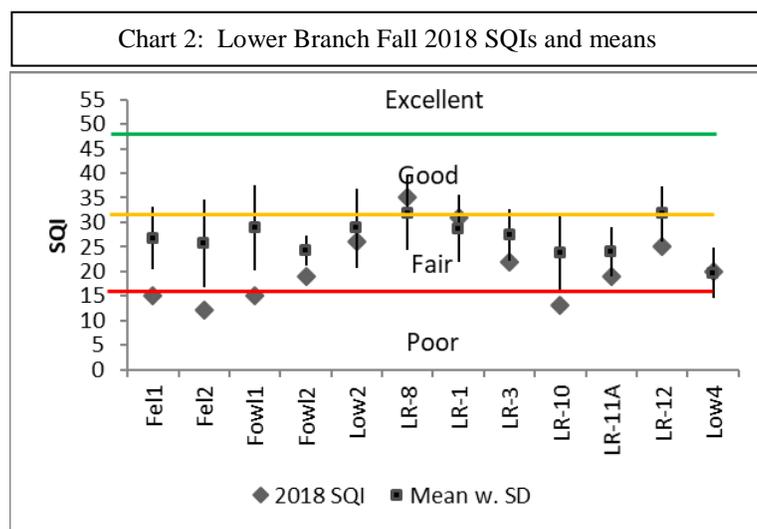
Subwatershed	slope	p-value	True trend	Subwatershed average score	Water Quality Rating
Main 1-2	-0.4303	0.0097	yes, negative	30	Fair
Upper	-0.3378	0.0053	yes, negative	25	Fair
Johnson Creek	0.4601	0.0330	yes, positive	35	Good
Middle 1	-0.1844	0.3028	No trend	32	Fair
Middle 3	0.4714	0.0010	yes, positive	22	Fair
Lower 1	-0.3662	0.0029	yes, negative	28	Fair
Lower 2	-0.1728	0.3495	no trend	26	Fair
Main3-4	-0.5329	0.2181	no trend	28	Fair

Individual sites were examined for long term trends (Table 3). Of the sites sampled in fall 2018, five had significant trends. All but one (MR-2a) had negative trends.

**Table 3: Fall Bug Hunt Trend Summary 2001-2018 by site**

Site	slope	p-value	True trend	Site average score	Water Quality Rating
Mur2	-0.9206	0.0368	yes, negative	24	Fair
Peb3	-1.7049	0.0437	yes, negative	26	Fair
MR-24	-2.3841	0.0393	yes, negative	27	Fair
MR-2a	1.0751	0.0370	yes, positive	39	Good
MR-14	-1.1646	0.0148	yes, negative	29	Fair

**Lower Branch**



Twelve sites were sampled on the Lower Branch of the Rouge (see Table 4). Two tributaries were sampled: Fellows Creek and Fowler Creek. SQIs averaged FAIR (21). One site scored GOOD, seven FAIR and four POOR.

All nine sites had three or more years of data (Chart 2). Six sites were below a standard deviation of the average for the site (Fel1, Fel2, Fowl1, Fowl2, LR-10, LR-12) and none were above. Long term trend analysis showed a significant negative trend for the Lower 1. No individual sites showed a significant trend. The upstream sites on the tributaries Fellows and

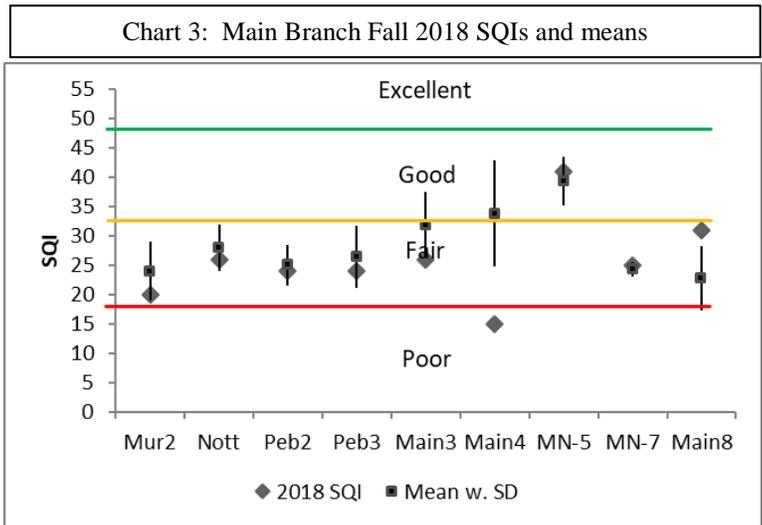
Fowler all had poor scores and were significantly lower than average.

Last year, flow in the Lower branch was drastically decreased when the ongoing discharge from the Ypsilanti Waste Water Treatment Plant was temporarily stopped from September 2017 to January 2018 for pump repair. The low water levels and flow caused very low levels of dissolved oxygen that is a contributing factor to lower macroinvertebrate scores.

**Main Branch**

Nine sites on the Main Branch were sampled, including three tributaries: Murphy, Nottingham, and Pebble. SQIs averaged FAIR (26). There was one GOOD, seven FAIR, and one POOR SQIs. The GOOD site was MN-5.

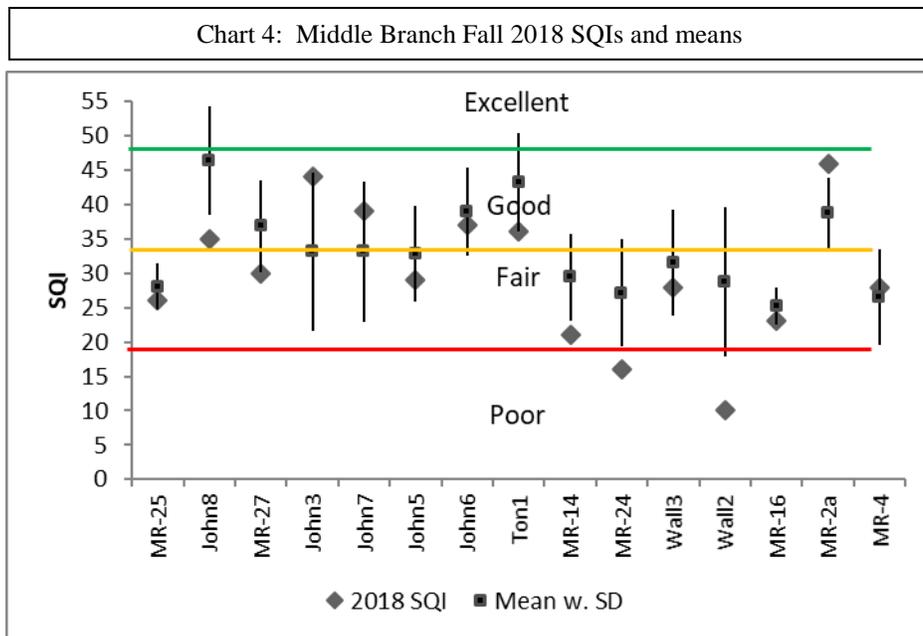
All nine sites on the Main had three or more years of data (Chart 3). One site was above a standard deviation of the mean (Main8) and one site was below (Main3). Long term trend analysis shows a significant negative trend for the Main 1/2 subwatershed (Table 2, Fig. 1-7). Two Main tributaries had negative trends (Table 2): Mur2 and Peb3.



It is interesting that in the Main branch, the site that was improving and the site with the highest score were both on the Main branch rather than any of the tributaries, and fairly far downstream. MN-5 is near Eight Mile Road and Main8 is downstream of the Ford Rouge plant at Fordson Island.

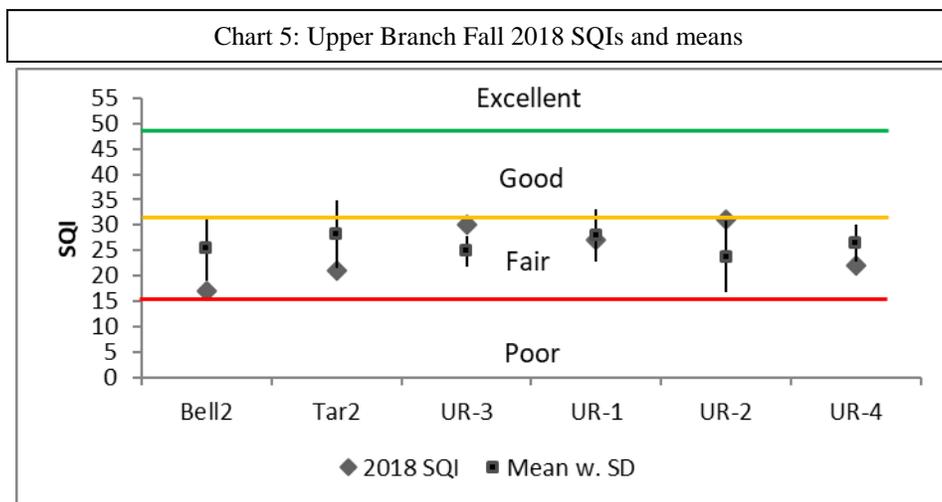
**Middle Branch**

Fifteen sites were sampled on the Middle Branch including Johnson (7), Tonquish (4) and the Walled Lake drainage (2). SQI scores averaged FAIR (30). There were six GOOD, seven FAIR and two POOR (MR-24 & Wall2) SQIs.



All fifteen sites had three years or more of data (Chart 4). Of these, one was above a standard deviation of the mean (MR-2a) and three were below (MR-14, MR-24, & Wall2). In long term trend analysis, the Middle 3 and Johnson Creek had positive trends (Table 2, Figures 1-7). MR-14 and MR-24 also had negative trends by site while MR-2a had a positive trend (Table 3).

### Upper Branch



Six Upper branch sites were sampled including Bell and Tarabusi Creeks. SQIs averaged FAIR (25). Five sites were FAIR and one POOR (Bell2).

All six sites had three years or more of data (Chart 5). One site was above a standard deviation of the mean (UR-3) and three sites were below (Bell2, Tar2, and UR-4). Long term trend analysis shows a significant decline in scores since 2001. No

individual sites had significant trends.

## THANK YOU!!!!!!

Thank you to all the **volunteers** and **Team Leaders**, **Schoolcraft College** for hosting the event, professor **Diane O’Connell** and **the Geography Department** for **providing refreshments**, **Daisy Lovain** and **Max Baker** for running registration, **Wayne County** for sampling and providing data for 14 sites, **Sue Thompson** for sampling four additional sites, helping with identification, trend analysis and reviewing the report, biologist **Bruce McCulloch** for SQI comparison graphs and reviewing the report, Schoolcraft intern **Haley Wechter** for identifying specimens and data input, and the Office of the Great Lakes, the Clif Bar Family Foundation, the Erb Family Foundation, the DTE Energy Foundation, Waste Management, Washtenaw County Water Resources Department and individual donations for funding the program.

## Join us for the Winter Stonefly Search

**Sat. Jan. 26, 2019** 9 am – 3 pm at PARC, 650 Church, Plymouth, MI 48170

Register at [www.therouge.org](http://www.therouge.org)

(by Jan. 5, 2019)

**New this year: Stonefly Refresher Sat. Jan. 12 10am-12pm at PARC**



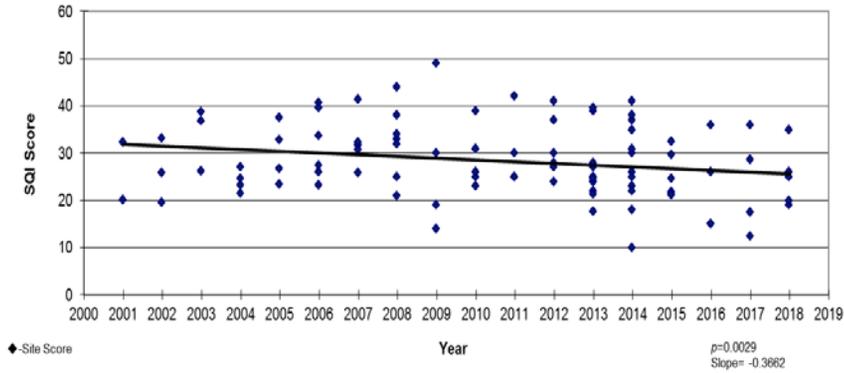
Table 4 : Fall 2018 Data								
BRANCH	FIELDID	Site Name	Collector*	SQI	Score	#Taxa	#EPT	#Sens
<b>Lower Branch</b>								
Lower	Fel1	Top of Hill Ct	FOTR	15	POOR	5	1	0
Lower	Fel2	Vintage Valley	FOTR	12	POOR	5	1	0
Lower	Fowl1	Prospect	FOTR	15	POOR	5	0	0
Lower	Fowl2	Fowler Beck	FOTR	19	FAIR	7	1	0
Lower	Low2	Cherry Hill	FOTR	26	FAIR	14	2	0
Lower	LR-8	Ridge Proctor	FOTR	35	GOOD	15	2	0
Lower	Low4	Sheldon Rd	WC	20	FAIR	8	1	0
Lower	LR-12	Morton Taylor	WC	25	FAIR	9	3	0
Lower	LR-1	Commerce Ct	WC	31	FAIR	12	2	0
Lower	LR-3	Goudy Park	WC	22	FAIR	9	2	0
Lower	LR-10	Inkster	WC	13	POOR	5	1	0
Lower	LR-11A	Ford Field east	WC	19	FAIR	10	1	0
<b>Main Branch</b>								
Main	Mur2	Roeper School	FOTR	20	FAIR	10	0	0
Main	Nott	Country Day	FOTR	26	FAIR	10	1	0
Main	Peb2	Pebble 13 Mile	FOTR	24	FAIR	9	0	0
Main	Peb3	Pebble d/s Dam	FOTR	24	FAIR	9	1	0
Main	Main3	Booth Pk	FOTR	26	FAIR	8	1	0
Main	Main4	Linden Pk	FOTR	15	POOR	7	1	0
Main	MN-5	Bridge St	WC	41	GOOD	17	3	1
Main	MN-7	Rouge Park	WC	25	FAIR	13	2	0
Main	Main8	Fordson Island	FOTR	31	FAIR	12	1	0
<b>Middle Branch</b>								
Middle	MR-25	Maybury East	ST	26	FAIR	9	2	0
Middle	John8	Maybury Angell	FOTR	35	GOOD	15	5	1
Middle	MR-27	Ridge	FOTR	30	FAIR	14	4	0
Middle	John3	6M NV	FOTR	44	GOOD	20	4	0
Middle	John7	Arcadia	FOTR	39	GOOD	17	5	0
Middle	John5	Fish Hatchery Pk	FOTR	29	FAIR	10	2	0
Middle	John6	Hines	FOTR	37	GOOD	16	2	0
Middle	Ton1	Plym Twp Pk	ST	36	GOOD	13	3	0
Middle	MR-14	Smith Elem	ST	21	FAIR	11	1	0
Middle	MR-24	Lion's Pk	ST	16	POOR	8	1	0
Middle	MR-16	Canoe Pk	WC	23	FAIR	11	2	0
Middle	MR-2a	Reservoir Rd W	WC	46	GOOD	20	5	0
Middle	MR-4	Levan Knoll	WC	28	FAIR	10	2	0
Middle	Wall3	WL 12 M	FOTR	28	FAIR	10	2	0
Middle	Wall2	WL 10 M	FOTR	10	POOR	6	1	0
<b>Upper Branch</b>								
Upper	Bell2	Schoolcraft College	Sch	17	POOR	10	0	0
Upper	Tar2	Tara 8 M	FOTR	21	FAIR	7	2	0
Upper	UR-3	Tara 7 M	FOTR	30	FAIR	10	2	0
Upper	UR-1	Lola Valley	WC	27	FAIR	10	2	0
Upper	UR-2	Bell Cr Pk	WC	31	FAIR	11	2	0
Upper	UR-4	5M Beech Daly	FOTR	22	FAIR	10	3	0

\* FOTR=Friends of the Rouge, Sch = Schoolcraft College, ST = Sue Thompson, WC = Wayne County

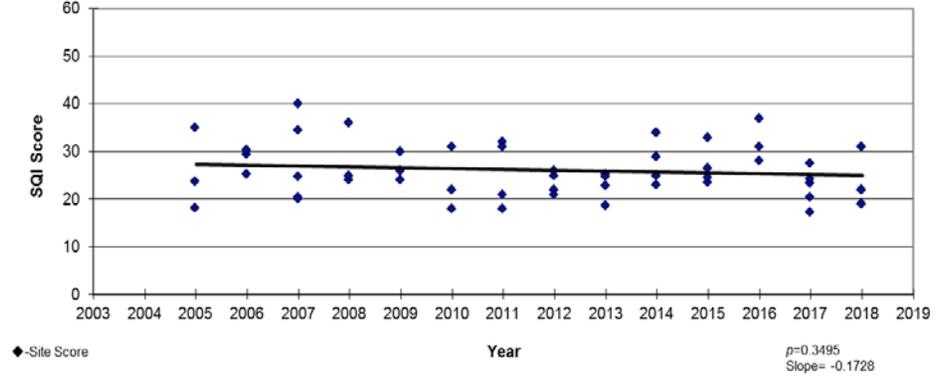
Note on table 4: UR-4 sampled by WC

## Data Trend Tables

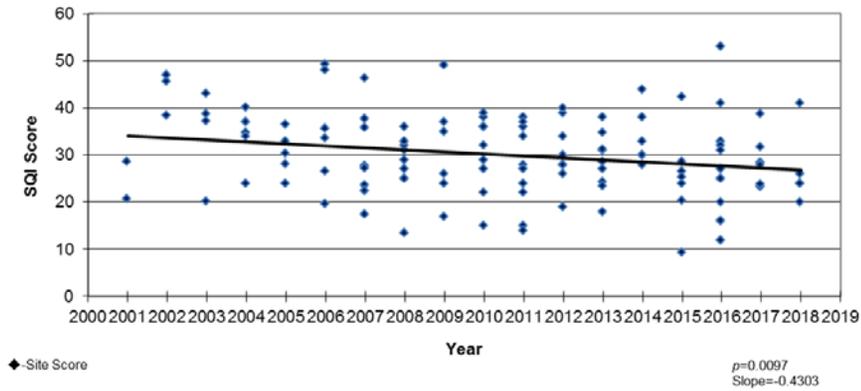
Rouge Lower 1 Storm Water Management Area  
Macroinvertebrate Data Trend  
Fall 2001-2018 All sites (Wayne County and Friends of the Rouge Data)



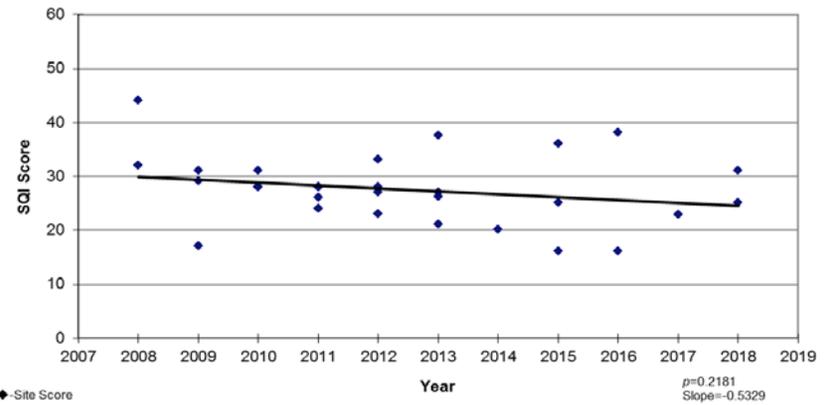
Rouge Lower 2 Storm Water Management Area  
Macroinvertebrate Data Trend  
Fall 2004-2018 All sites (Wayne County and Friends of the Rouge Data)

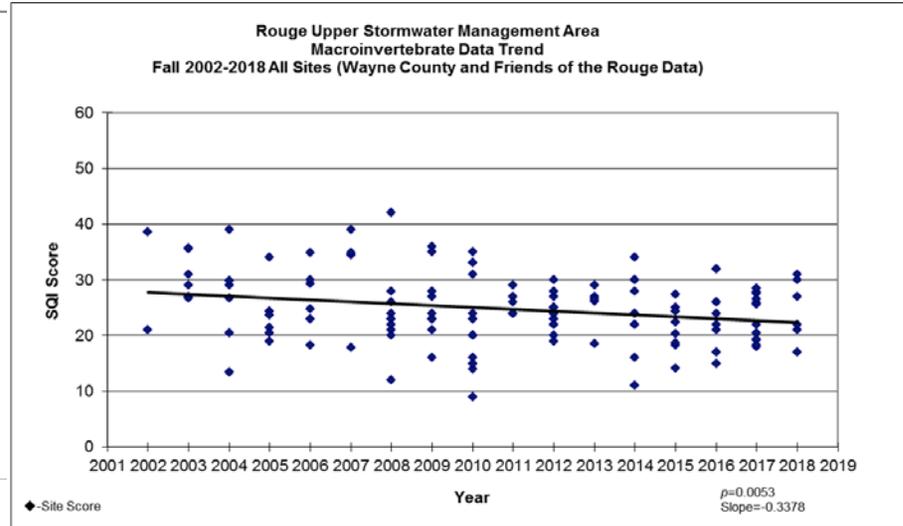
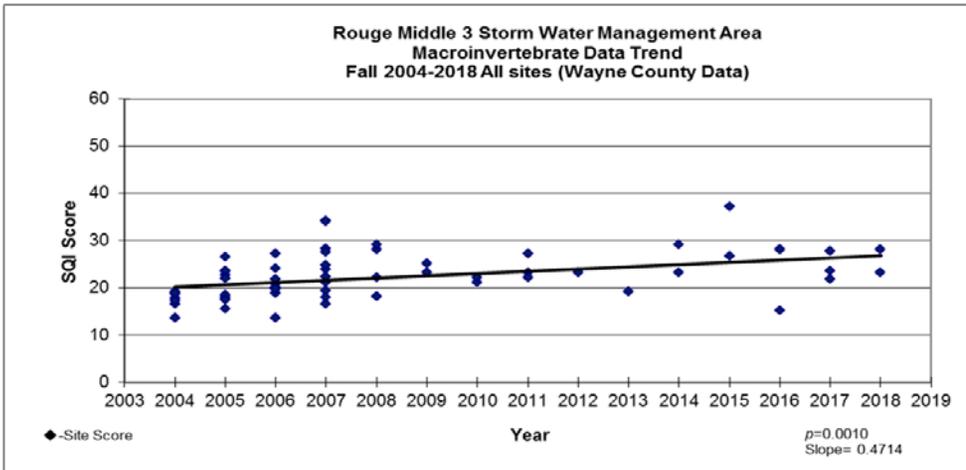
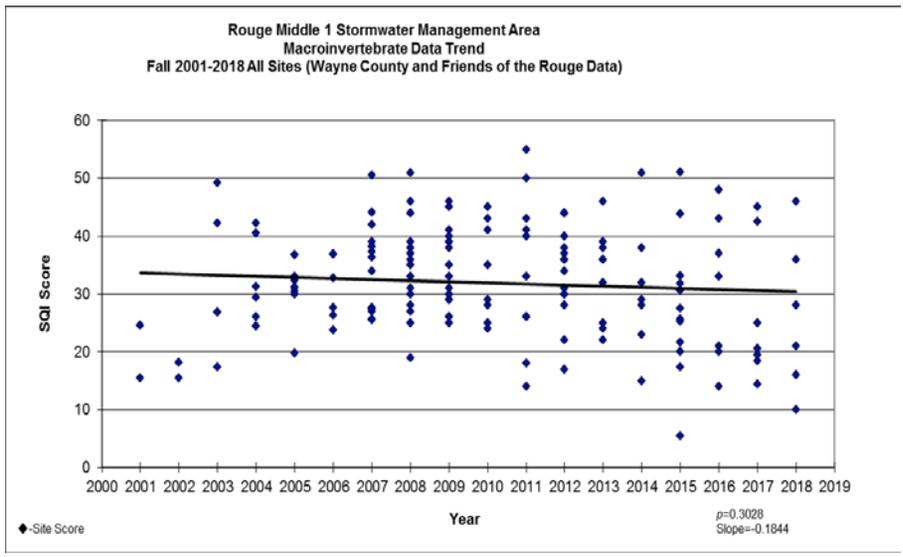
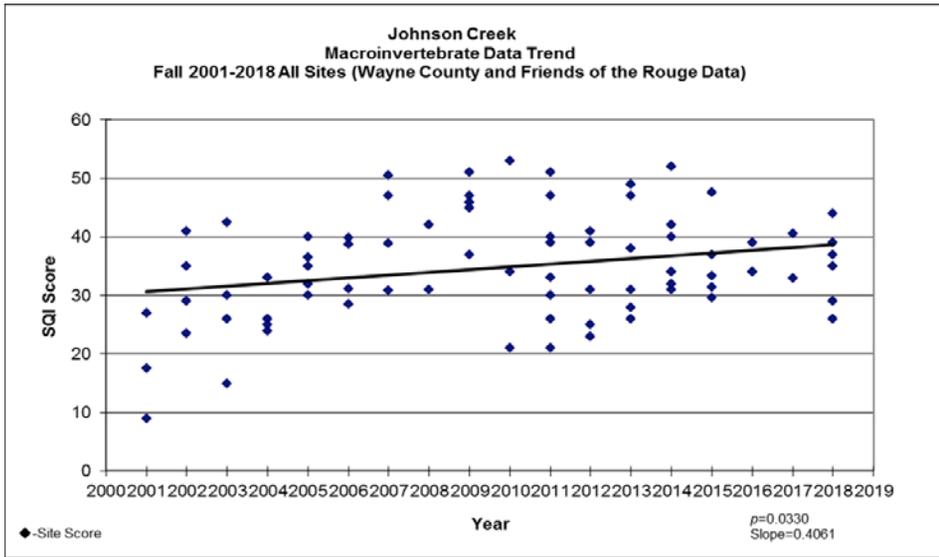


Rouge Main 1/2 Storm Water Management Area  
Macroinvertebrate Trend  
Fall 2001-2018 All Sites (Wayne County and Friends of the Rouge Data)



Rouge Main 3/4 Stormwater Management Area  
Macroinvertebrate Data Trend  
Fall 2002-2018 All Sites (Wayne County and Friends of the Rouge Data)







## Rouge River Watershed 2018 Winter Stonefly Search

[www.therouge.org](http://www.therouge.org)

The Friends of the Rouge Benthic Macroinvertebrate Monitoring Program lost its regular funding in December 2017 when the Alliance of Rouge Communities did not renew the funding they had been providing for the past five years. Friends of the Rouge (FOTR) has been working hard to find replacement funding to ensure that this long term monitoring program can continue. Thanks to the donations of sponsors, donors and participants, we were able to raise enough funds to hold the Winter Stonefly Search. The Spring and Fall Bug Hunts are still in need of funding and the Spring Bug Hunt has been cancelled.

Seventy-two volunteers participated in Friends of the Rouge's 2018 Winter Stonefly Search on January 20. Luckily, temperatures moderated a bit (high 43°F) but teams still had to break through thick ice at many sites. The University of Michigan-Dearborn's Environmental Interpretive Center hosted the event.

*Stoneflies are sensitive indicators of healthy streams. Unlike other insects, winter stoneflies develop into adult flies in the winter. The Winter Stonefly Search is part of Friends of the Rouge volunteer benthic macroinvertebrate monitoring program.*

This report contains data for a total of 36 sites. During the Stonefly Search, twelve volunteer teams sampled 24 sites. An additional seven sites were sampled by Wayne County Department of Public Services Water Quality Management Division, one site on Bell Creek by Schoolcraft College students, and four sites on Johnson Creek by Sue Thompson.

Stoneflies were found at fourteen of the thirty-six sites (39%) (map and Table 1). All stoneflies were found on the Middle or Lower branches with the exception of one stonefly found in the Upper Branch (Up1). This was the first time since 2010 that stoneflies have been found in the Upper branch! Three different types of stoneflies were found: Capnids, Perlodids, and Taeniopterygidae (*Genus Taeniopteryx*) with the majority being Capnids (Table 1).

On the Lower Branch, two of the ten sites had stoneflies (20%). One was in Fellows Creek and one was in Fowler Creek. Both sites had slender winter stoneflies (Capnids).

On the Middle Branch, eleven of the twenty-one sites had stoneflies (52%). Nine of these sites were on the Johnson Creek, the Rouge's coldwater tributary. Two of these sites were on the Middle branch: MR-2 and MR-20. All nine sites had slender winter stoneflies (Capnids). In addition, one site also had Perlodids (MR-25) and one site had *Taeniopteryx* (John3). Two sites on Tonquish Creek were sampled but none were found despite having been found there before. One of the teams encountered a possible oil spill at one of their sites on Hines Drive. This was reported to the state and county and investigated.

Only one site on the Main Branch was sampled for stoneflies and none were found. The site was MN-5. In 2010, stoneflies were found just downstream of this site at Eight Mile Road but have not been found since. Stoneflies have not been found upstream of this site on the Main branch despite sampling Main Branch sites over many years.

Four Upper Branch sites were sampled and stoneflies were found at one site: Up1, Heritage Park. This surprised the team as they were looking very hard, cracking through thick ice and had a *Detroit Free Press* reporter with them. The small insect they collected and put in the jar turned out to be a stonefly! Stoneflies have only been found at Up1 in 2010 and 2005. They were also found once downstream in Shiawassee Park in 2003 and upstream on Seeley Creek in 2012.

Overall, an average number of sites had stoneflies this year. The finding on at Up1 was a good sign for the Upper branch and Johnson Creek sites had a good number of sites with stoneflies (8/12 or 67%). The Lower sites had fewer stoneflies than usual even though all but two of the sites have had stoneflies before.

Thank you to all the volunteers, Michael Brosko for managing the equipment and data entry, Team Leaders, Daisy Lovain for running registration, the University of Michigan-Dearborn for providing meeting space, and Schoolcraft College, Wayne County and Susan Thompson for additional sampling. The Winter Stonefly Search is part of the Friends of the Rouge long term volunteer monitoring program.

Donations to support the program can be made at:  
<https://www.crowdrise.com/o/en/campaign/save-friends-of-the-rouges-benthic-macroinvertebrate-monitoring-program>

**Fall Bug Hunt**  
**Sat. October 13**  
**9am-4 pm**

\*Register by 9/28\*

**Team Leader Training Sept. 29** (must have previously attended an event)

**[www.therouge.org](http://www.therouge.org)** (register online)      **(313) 792-9621**  
**[spetrella@therouge.org](mailto:spetrella@therouge.org)**

Coordinated by Friends of the Rouge and funded by the Erb Family Foundation, Washtenaw County, Waste Management and contributions from participants and supporters. Additional data collection by Wayne County and Schoolcraft College.



Table 1: 2018 Stonefly Search Results					
FIELDID	Stream Name	Site Description	Team*	Stoneflies Present	Families
<b>Lower Branch</b>					
Fel1	Fellows Creek	Top of Hill Ct	1	N	
Fel2	Fellows Creek	Vintage Valley	2	N	
Fel5	Fellows Creek	Warren Ridge	1	N	
Fel6	Fellows Creek	Hanford	2	Y	Capniidae
Fowl1	Fowler Creek	Prospect	3	Y	Capniidae
Fowl2	Fowler Creek	Fowler Beck	3	N	
Low2	Lower Rouge	Cherry Hill	11	N	
LR-8	Lower Rouge	Ridge Proctor	11	N	
LR-12	Lower Rouge	Morton Taylor	WC	N	
LR-3	Lower Rouge	Goudy Park	WC	N	
<b>Middle Branch</b>					
John1	Johnson Creek	5M Salem	4	Y	Capniidae
John2	Johnson Creek	5M NV	4	Y	Capniidae
John3	Johnson Creek	6M NV	5	Y	Capniidae, Taeniopterygidae
John5	Johnson Creek	Fish Hatchery Pk	6	N	
John6	Johnson Creek	Hines	7	N	
John7	Johnson Creek	Arcadia	5	Y	Capniidae
John8	Johnson Creek	Maybury Angell	6	Y	Capniidae
MR-22	Johnson Creek	Maybury south	ST	Y	Capniidae
MR-23	Johnson Creek	Maybury north	ST	Y	Capniidae
MR-25	Johnson Creek	Maybury East	ST	Y	Capniidae, Perlodidae
MR-26	Johnson Creek	Napier Rd	ST	N	
MR-27	Johnson Creek	Ridge	WC	Y	Capniidae
Ton1	Tonquish Creek	Plym Twp Pk	10	N	
Ton1/2	Tonquish Creek	Canton Ctr Rd	10	N	
Mid1	Middle Rouge	Northville Rec E	8	N	
MR-1	Middle Rouge	Northville Rec W	7	N	
MR-20	Middle Rouge	Waterford Bd	8	Y	Capniidae
MR-2a	Middle Rouge	Reservoir Rd W	9	N	
MR-2	Middle Rouge	Reservoir Rd	WC	Y	Capniidae
MR-18	Middle Rouge	Springbrook Rec	9	N	
MR-3	Middle Rouge	Plym Riverside	WC	N	
<b>Main Branch</b>					
MN-5	Main Rouge	Bridge St	WC	N	
<b>Upper Branch</b>					
Bell2	Bell Branch	Schoolcraft College	Sch	N	
Up1	Upper Rouge	Heritage Park	12	Y	Capniidae
Up2	Upper Rouge	Shiawasee Park	12	N	
UR-1	Upper Rouge	Lola Valley	WC	N	

\*#1-12=FOTR Volunteers, Sch=Schoolcraft students, ST=Sue Thompson, WC=Wayne County



# 2018 Rouge River Watershed Frog and Toad Survey

Friends of the Rouge  
650 Church Street Suite 209, Plymouth, MI 48170



[www.therouge.org](http://www.therouge.org)

*The Rouge River Watershed Frog and Toad Survey is a volunteer listening survey that has been coordinated by Friends of the Rouge since 1998. Volunteers are trained to recognize local frog and toad breeding calls and survey quarter-square-mile blocks within the Rouge River watershed from March through July. The purpose of the survey is to collect baseline data on the distribution of frogs and toads within the watershed as well as to give residents of an urbanizing area a positive experience with their local natural areas.*

Funding for this program was provided by the Erb Family Foundation, Bosch and GM Hamtramck.

## Summary of Volunteer Effort

Three training workshops were held in 2018.

- February 17 at Canton Summit on the Park      46 attendees (27 New/19 veteran)
- March 10 at Farmington Hills City Hall      70 attendees (45 New/25 veteran)
- March 17 at Livonia Civic Center Library      64 attendees (50 new/14 veteran)
- Total attendees      180 attendees (122 new/58 veteran)

Over two hundred volunteers including 68 veteran volunteers signed up for the survey. One hundred and thirty-two people submitted data for 173 survey blocks. One hundred and twenty five blocks were thoroughly surveyed (four or more observations, observations made in early, mid and late season).

New this year, we were able to offer online data entry for the first time. Long-time volunteer and GIS expert Corrie Fochler a a Geoform that linked to an online map. A little less than half (45%) of surveyors used the online data entry while 55% only submitted through the old methods (snail mail, emailed scanned or Excel spreadsheet). Since this was a new form, we asked surveyors to mail or email forms so we could check online submissions. Twenty-three volunteers only submitted their data using the form. Thank you to intern Haley Wechter who checked and input the 2018 data.

## 2018 Survey Results

For the 125 blocks that were fully surveyed, an average of 3.6 species was heard per block (Table 1). Only one block that was fully surveyed had no species calling. American toads and gray treefrogs were the most commonly heard species while bullfrogs and leopard frogs were the least commonly heard (Table 2). The earliest species to call was the leopard frog on March 1 and the latest to start were the gray treefrog and bullfrog on April 13 (Chart 2).

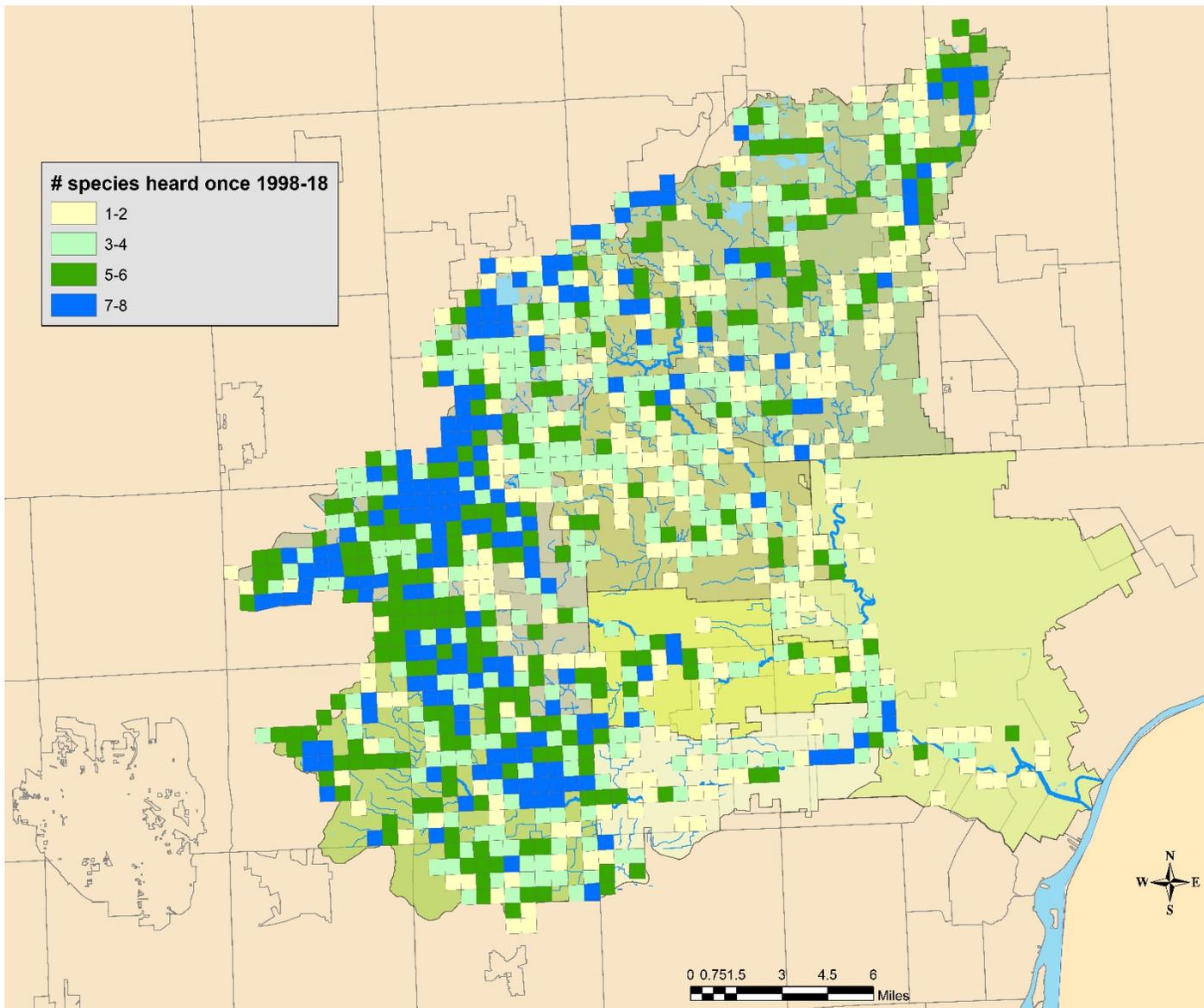
All but the Middle 3 subwatershed had all eight species calling but this subwatershed only had two blocks surveyed. The Lower 2 had the lowest percentage of species heard per block at 2.3.

**Table 1: Blocks by Subwatershed**

subwatershed	# blocks surveyed	avg. # species heard per block	highest # species heard in one block	# species in Subwatershed	Species not heard
Main 1-2	32	3.5	8	8	
Upper	16	3.0	7	8	
Middle 1	32	4.3	7	8	
Lower 1	29	3.9	8	8	
Lower 2	7	2.3	7	8	
Middle 3	2	4.5	5	6	Chorus frogs, leopard frogs
Main 3-4	7	2.9	6	8	
<b>Total</b>	<b>125</b>	<b>3.6</b>			

### Frog & Toad Diversity 1998-2018

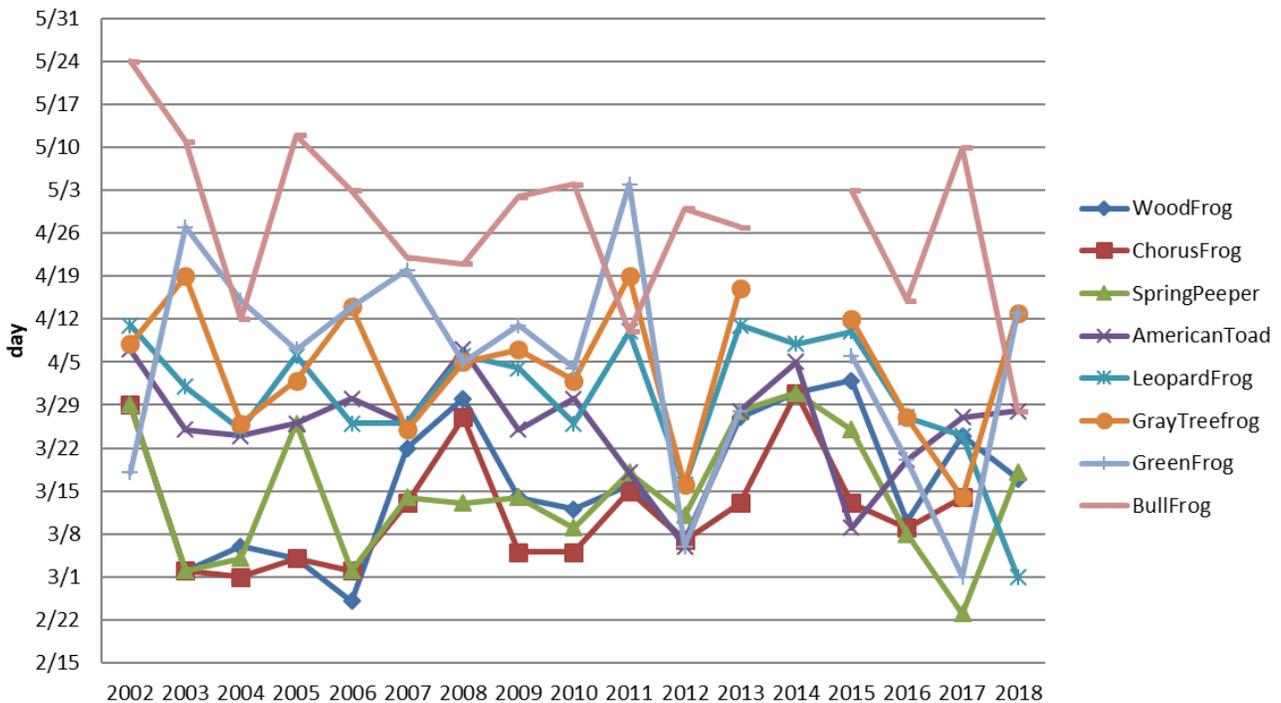
We compiled the number of species that have been heard at least once in every survey block since we started the survey in 1998. This includes data on 955 survey blocks. The resulting map shows how many species have been found in each block. A high diversity of species is linked with high quality wetlands.



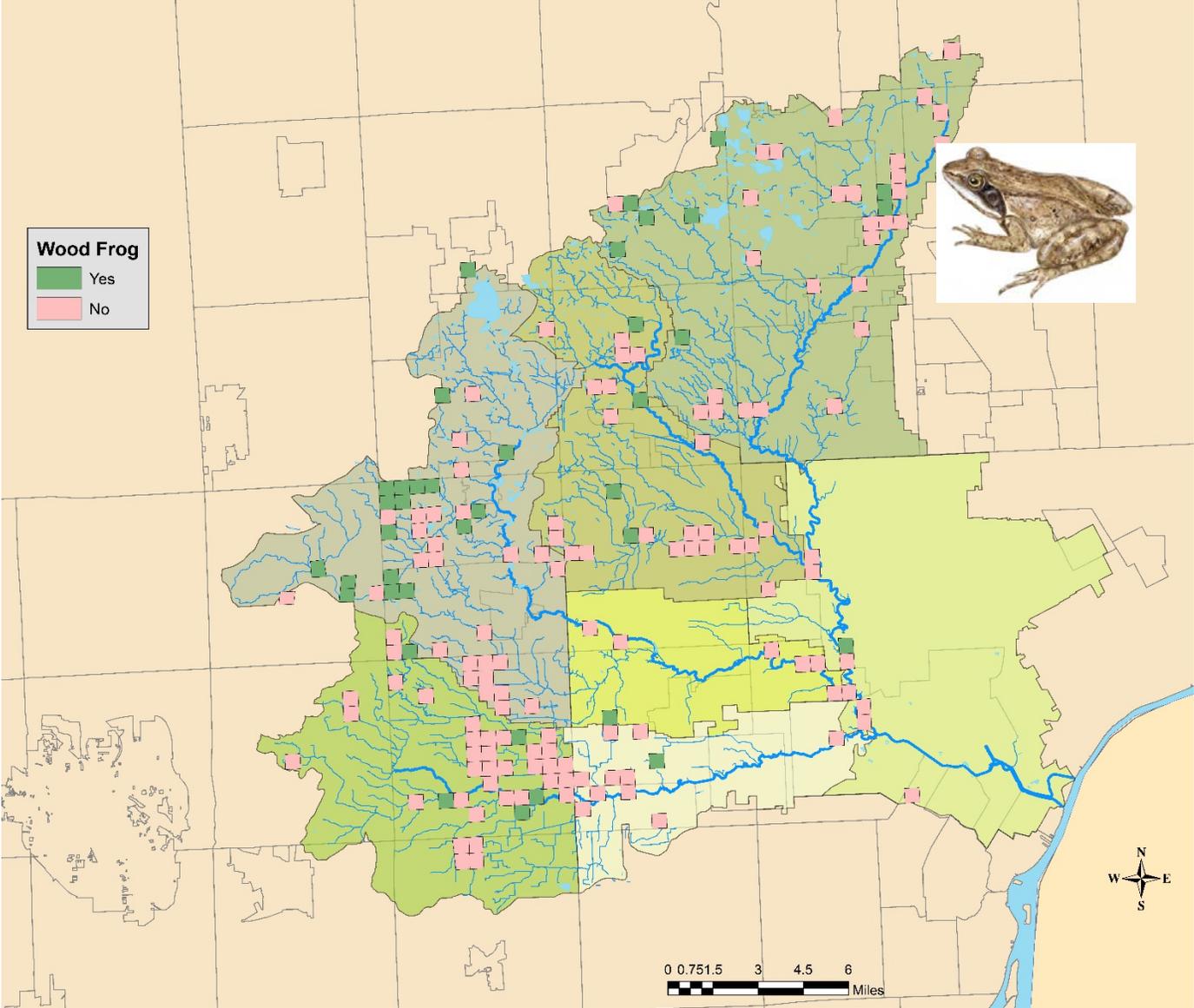
**Table 2: Percent of blocks in which species was heard, 2000-2018**

Year	average	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
w ood Frog	25%	21%	23%	33%	24%	26%	25%	30%	25%	27%	27%	24%	29%	19%	29%	19%	23%	20%	17%	14%
chorus frog	49%	44%	48%	55%	46%	45%	54%	48%	39%	49%	46%	47%	57%	49%	57%	46%	48%	52%	49%	50%
spring peeper	50%	45%	48%	54%	42%	40%	51%	56%	50%	49%	46%	56%	62%	55%	57%	41%	45%	50%	47%	48%
American toad	79%	70%	85%	86%	85%	79%	77%	79%	80%	88%	84%	89%	87%	78%	74%	61%	62%	71%	58%	49%
leopard frog	16%	12%	20%	16%	9%	16%	19%	22%	19%	19%	14%	18%	21%	12%	22%	5%	18%	8%	9%	5%
gray treefrog	52%	51%	61%	69%	39%		54%	56%	54%	62%	48%	53%	64%	48%	57%	37%	40%	35%	37%	47%
green frog	63%	49%	64%	70%	70%		64%	63%	64%	72%	68%	74%	70%	70%	64%	51%	53%	39%	38%	15%
bullfrog	16%	16%	20%	17%	16%		19%	28%	17%	17%	12%	22%	17%	10%	22%	10%	13%	5%	7%	0%
2014 not included in average as surveys ended early in 2014																				

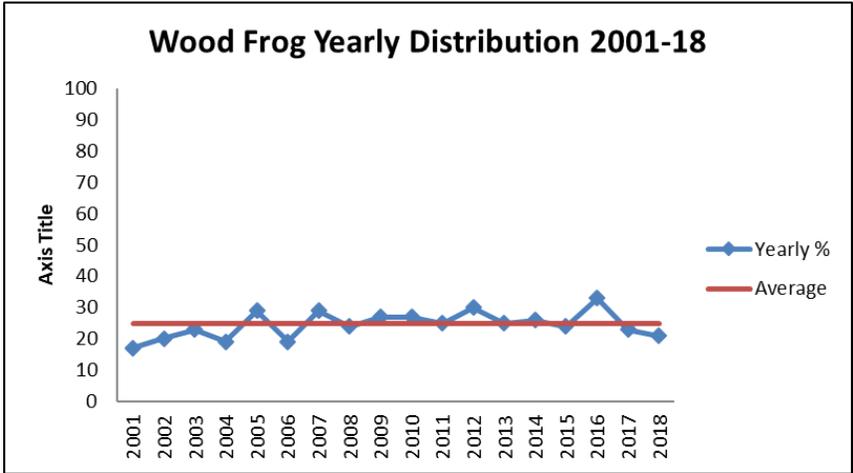
**Chart 2: First Calling Dates for each Species, 2002-2018**



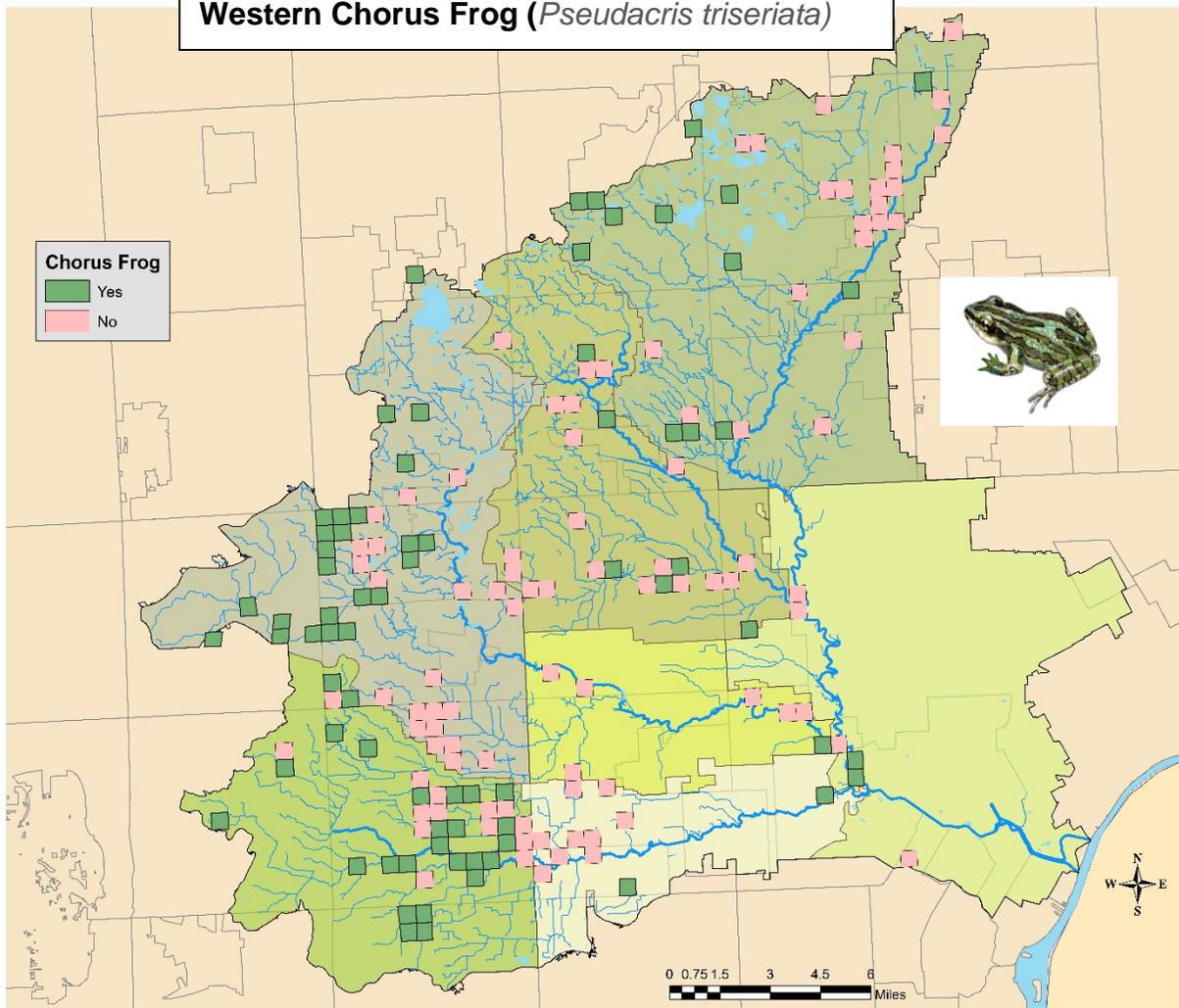
## Wood Frog (*Rana sylvatica*)



Wood frogs were heard in 21% of all survey blocks which is below average for the species (25%). They began calling on March 17 which is average. They were heard in all seven subwatersheds.

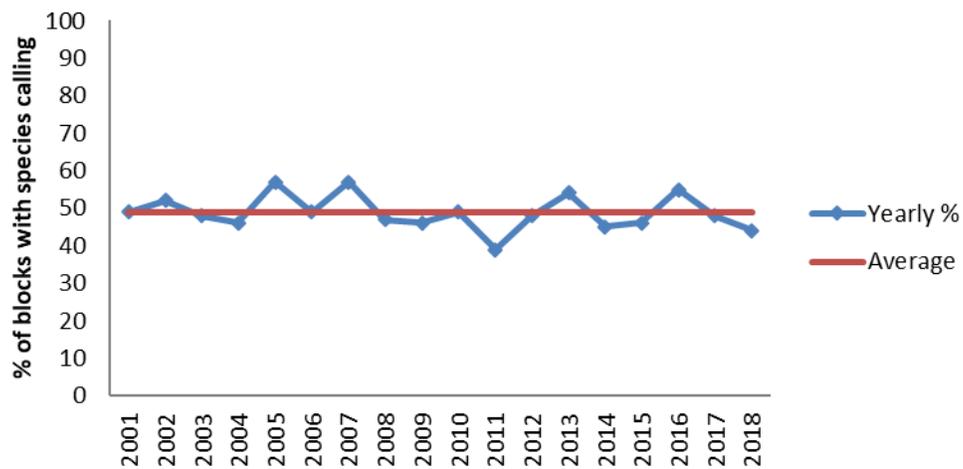


## Western Chorus Frog (*Pseudacris triseriata*)

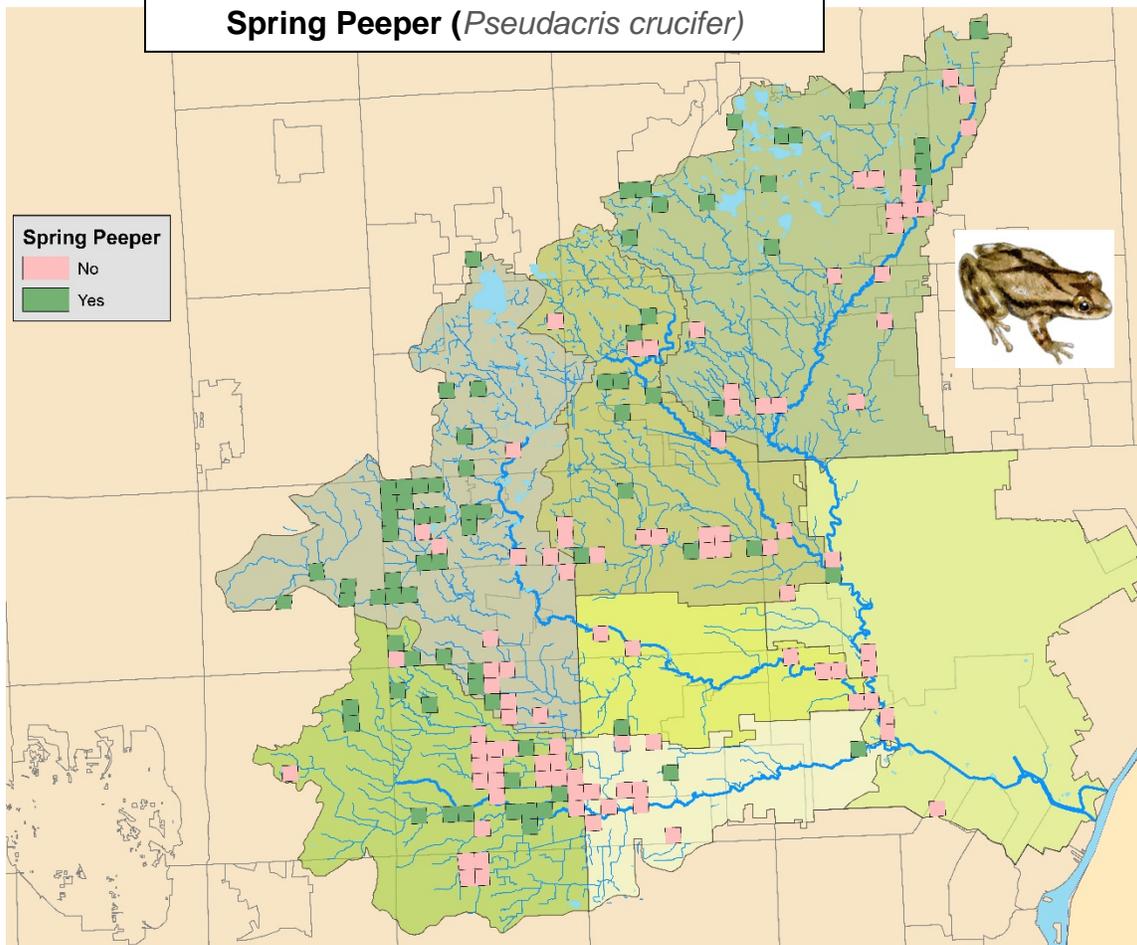


Western chorus frogs were heard in 44% of all survey blocks. This is below the average (49%) for the species. They started calling on March 13 which is average. Chorus frogs were heard in all subwatersheds but the Middle 3.

### Chorus Frog Yearly Distribution, 2001-18

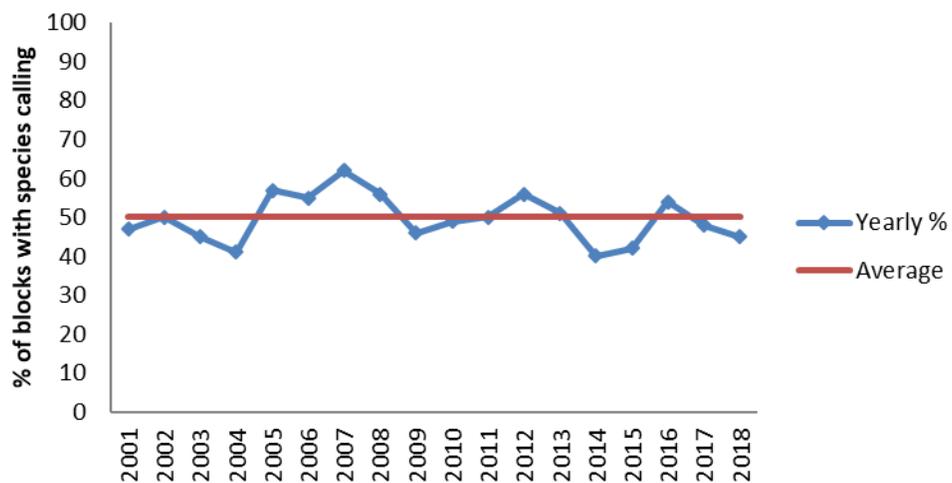


## Spring Peeper (*Pseudacris crucifer*)

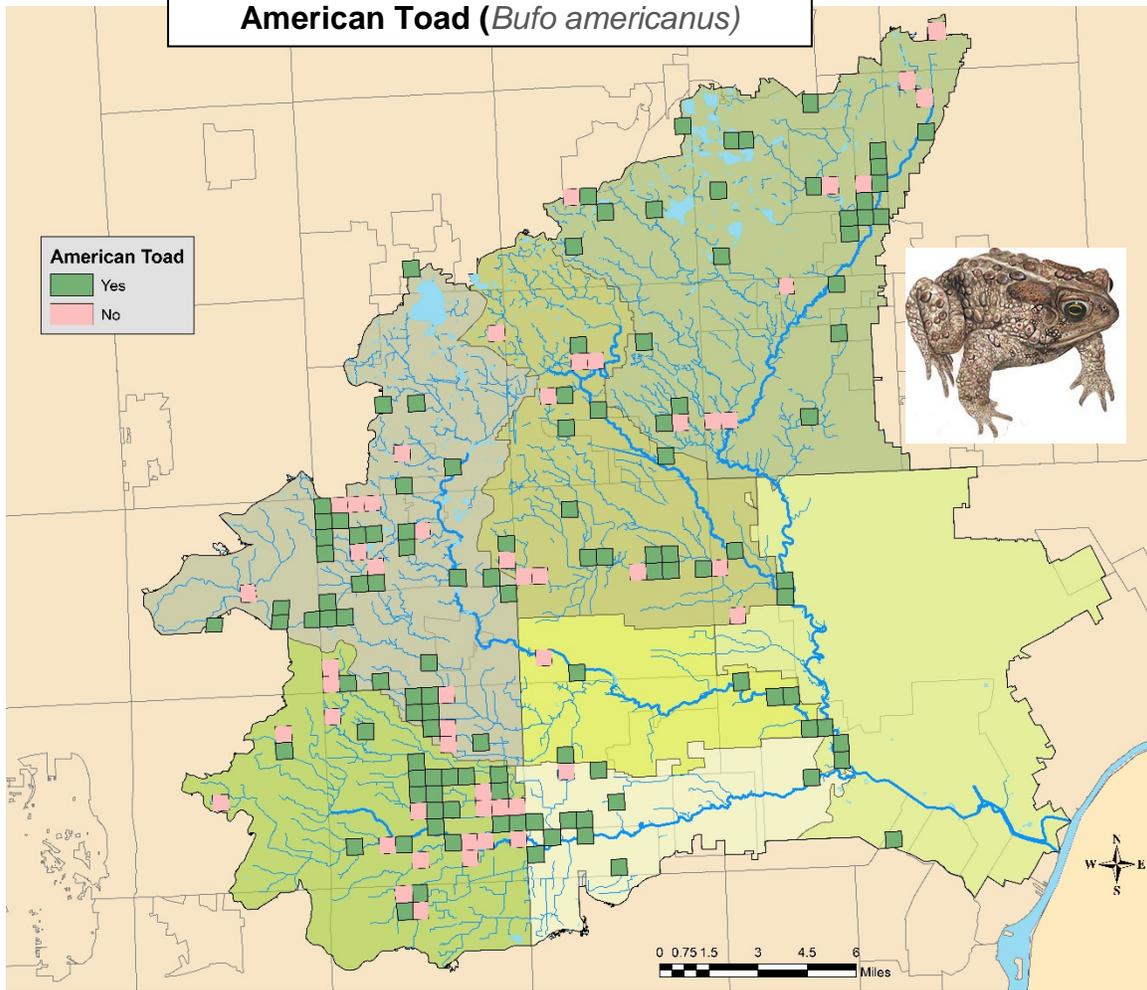


Spring peepers were calling in only 45% of the blocks, lower than average (50%). They began calling on March 18 which is average. They were heard in all seven subwatersheds.

### Spring Peeper Yearly Distribution, 2001-18

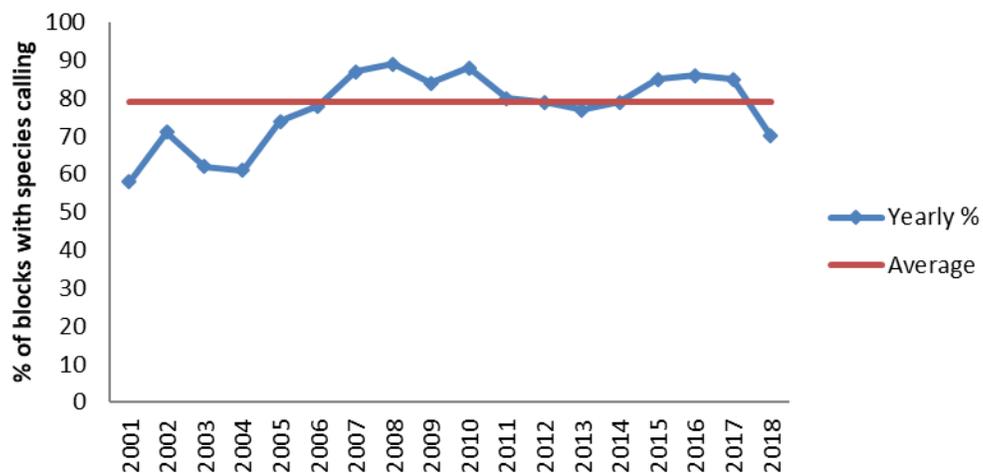


## American Toad (*Bufo americanus*)

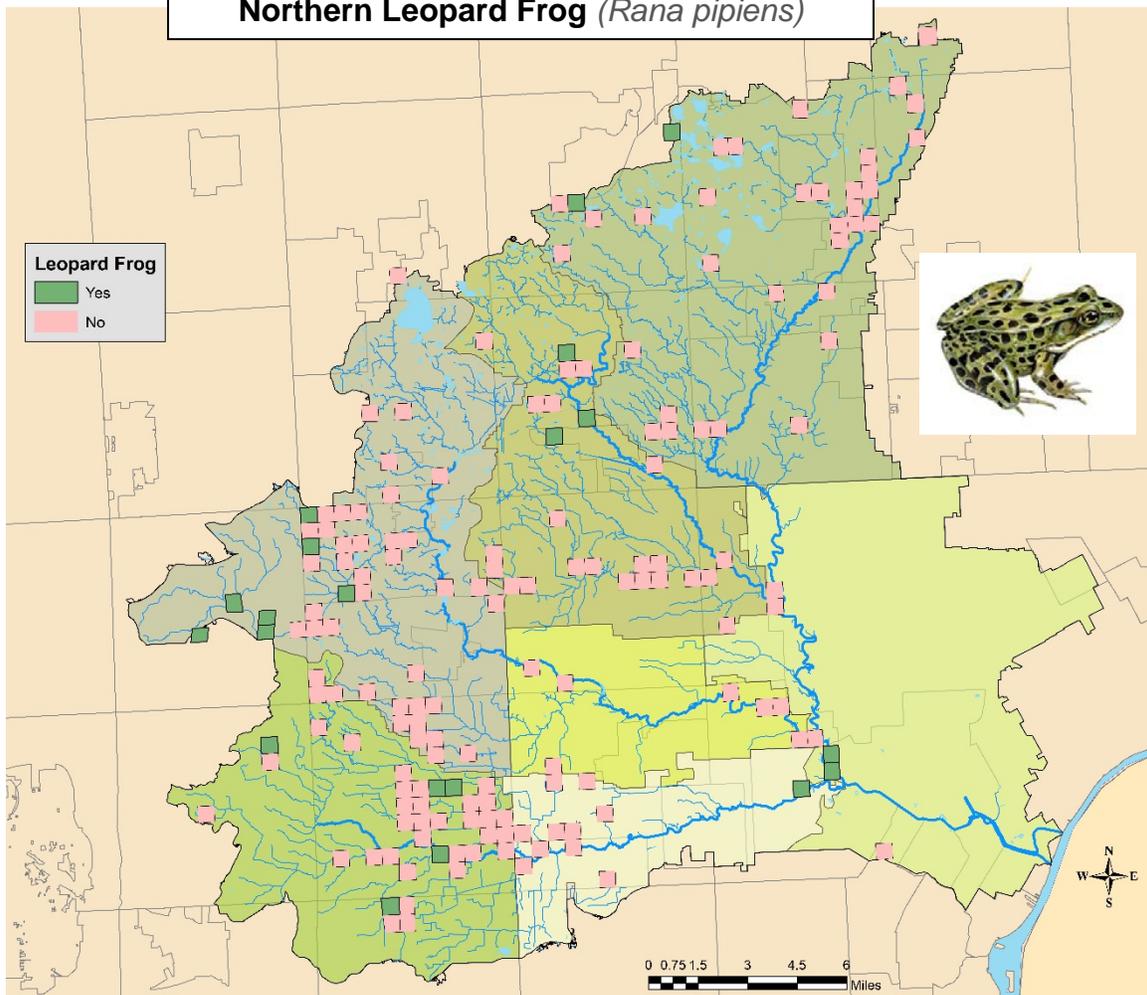


American toads were calling in 70% of all blocks which is lower than average (79%). They began calling on March 28 which is near average for the species (March 25). They were heard in all seven subwatersheds.

## American Toad Yearly Distribution, 2001-18

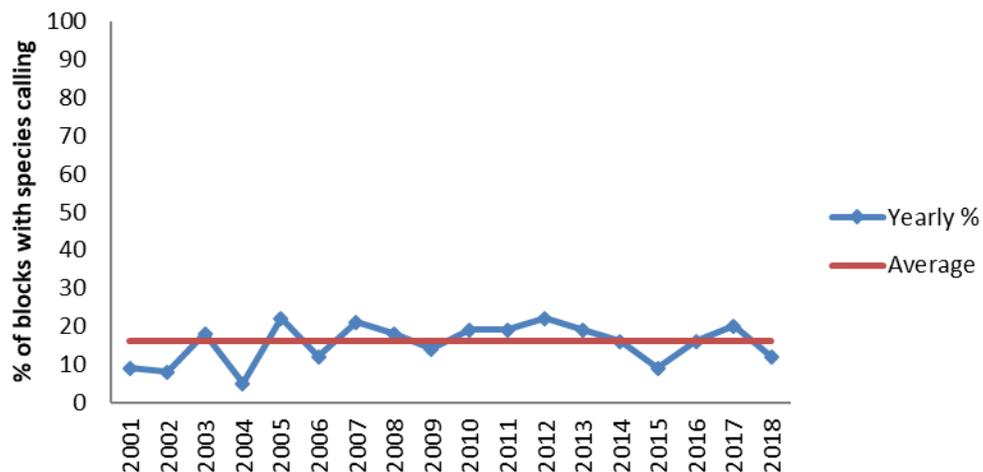


## Northern Leopard Frog (*Rana pipiens*)

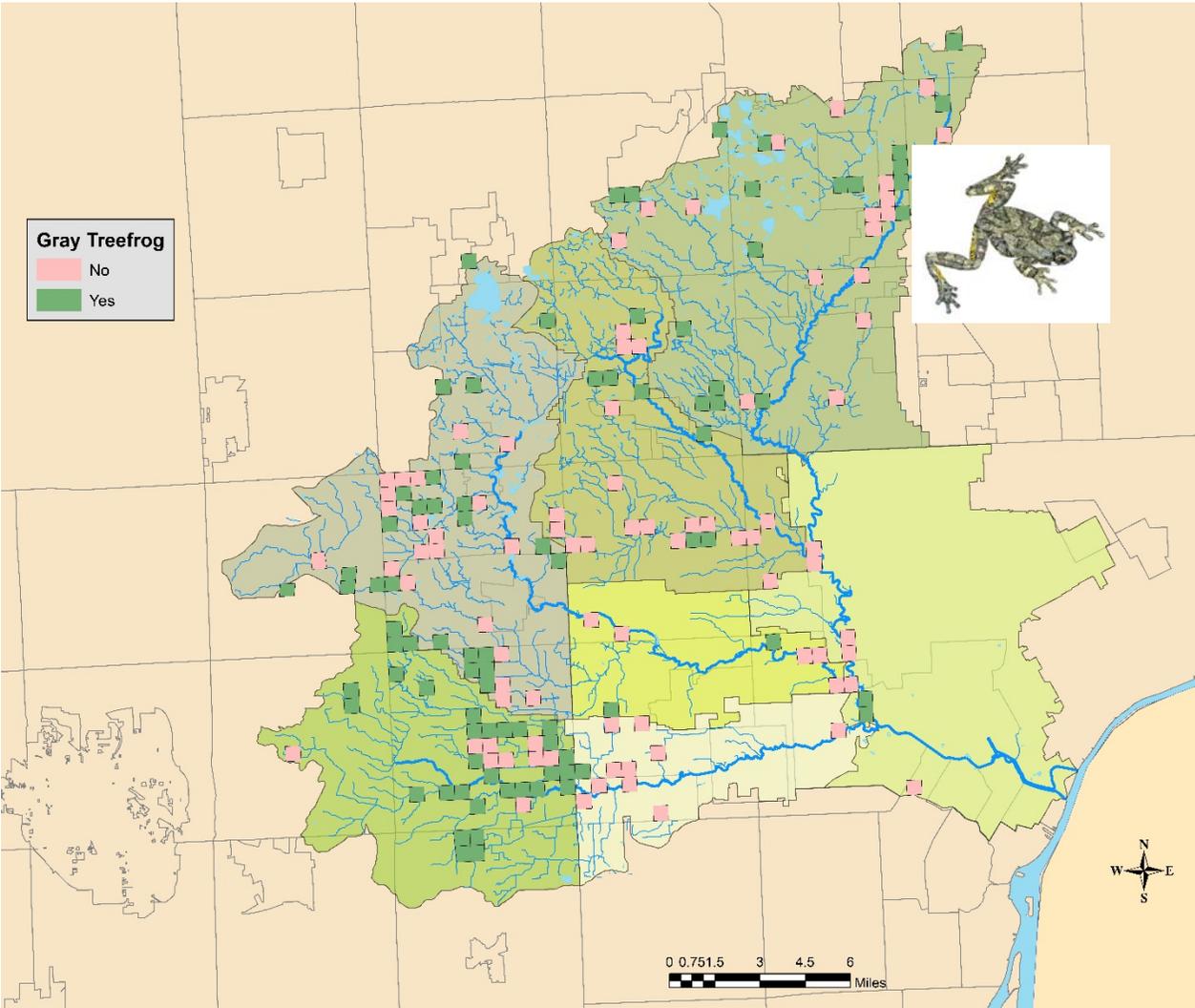


Northern Leopard Frogs, one of the most sensitive species in the watershed, were calling in 12% of all blocks which is lower than the average of 16% for this species. They were heard in all but the Middle3 subwatershed. They started calling on March 1 which is very early for the species.

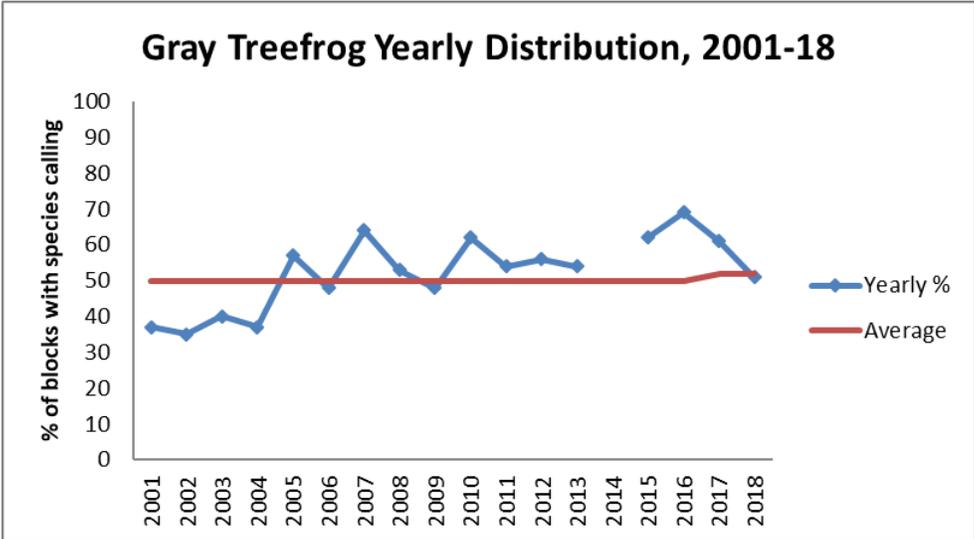
## Leopard Frog Yearly Distribution, 2001-18

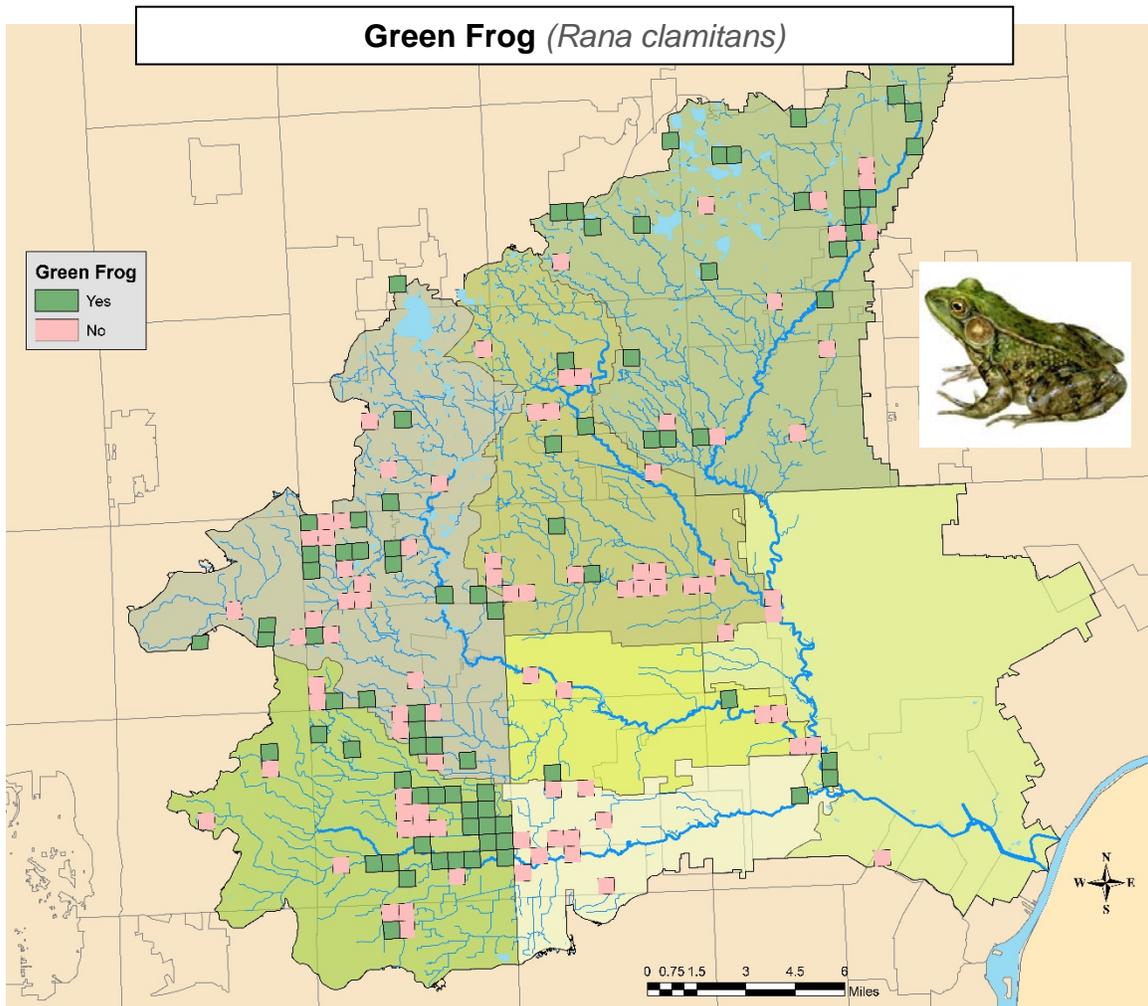


## Eastern Gray Treefrog (*Hyla versicolor*)

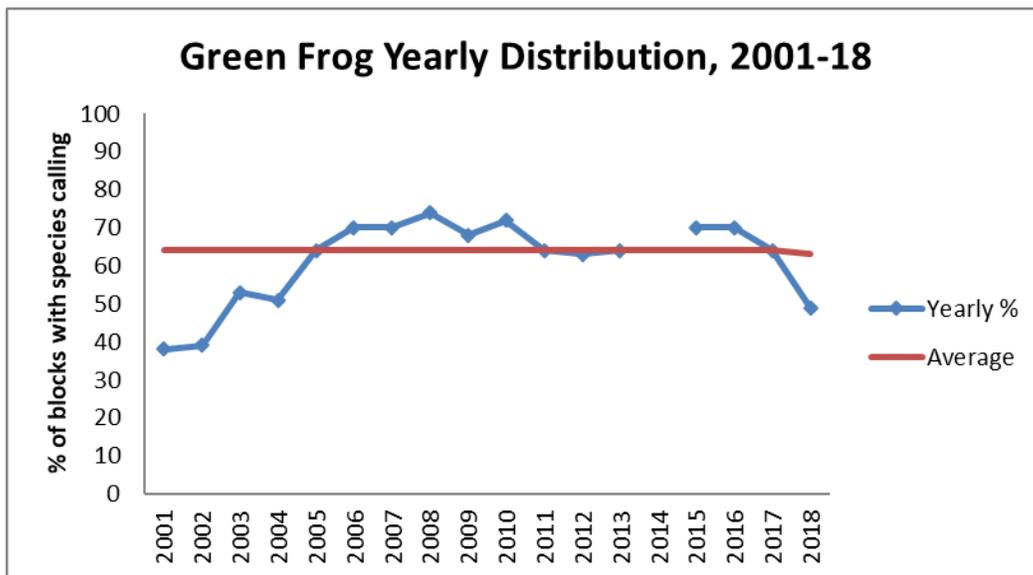


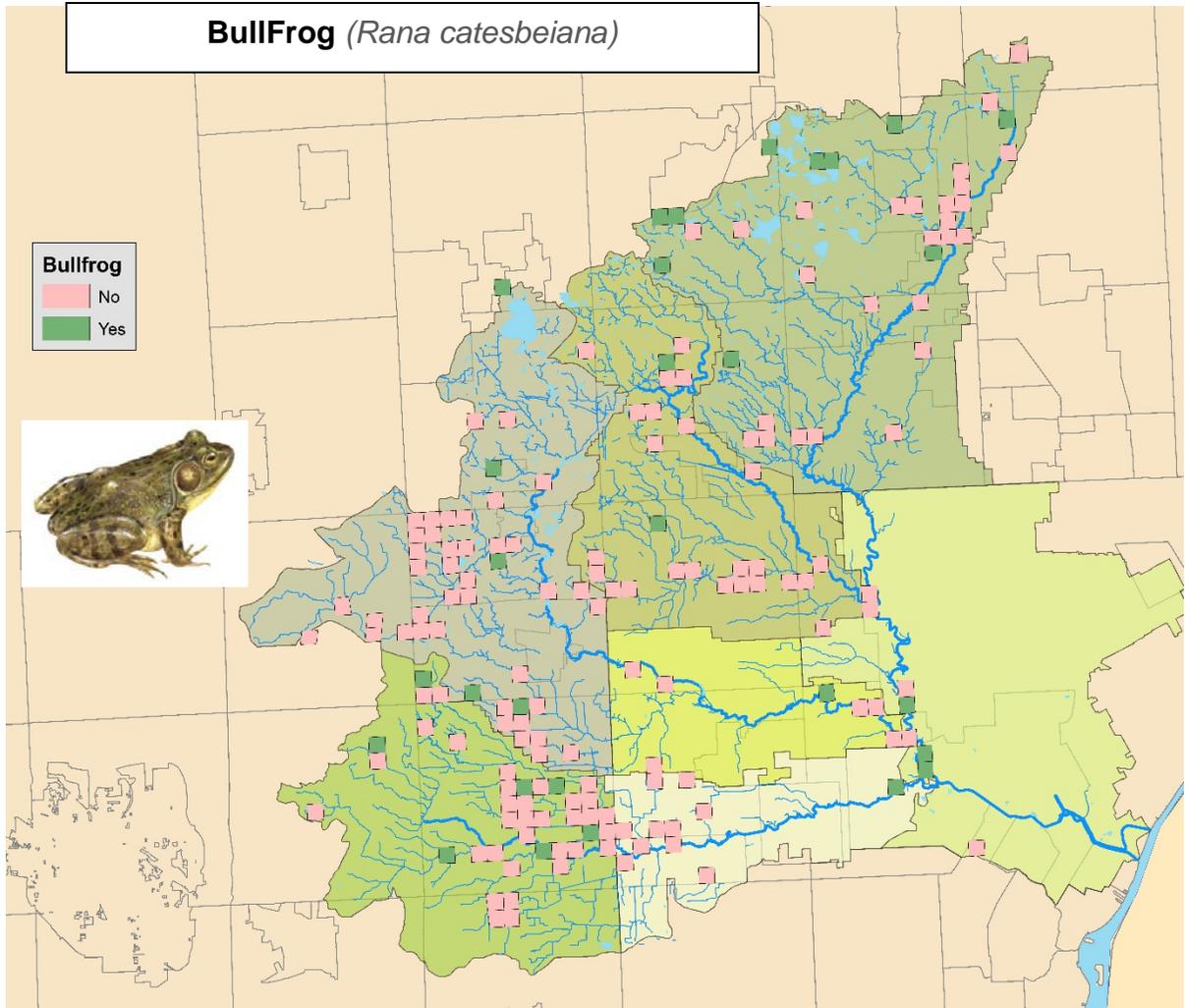
Eastern gray treefrogs were heard in 51% of all blocks which average. They were heard in all seven subwatersheds. They began calling on April 13 which is late.



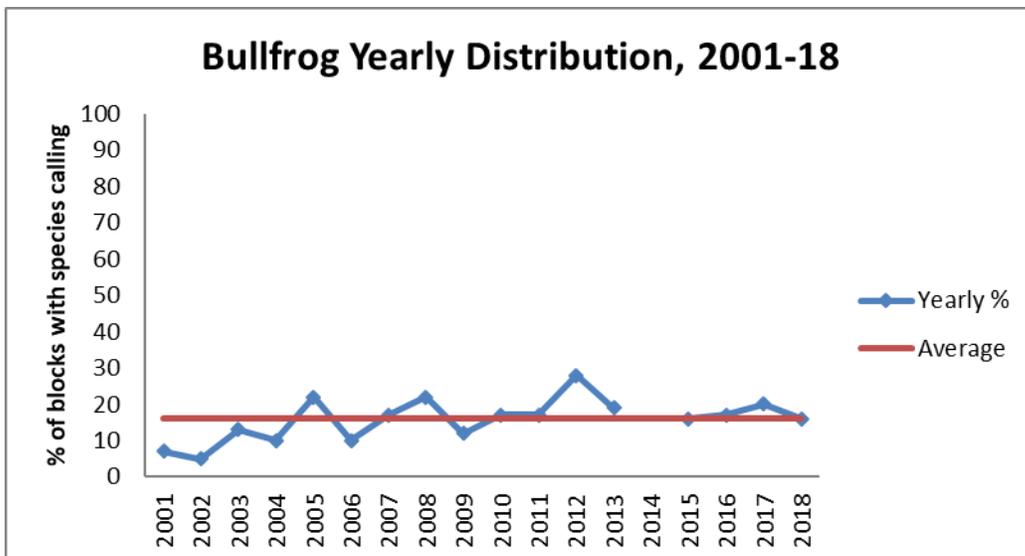


Green frogs were heard in 49% of blocks which is much lower than average (63%). They started calling on April 13 which is late. They were heard in all seven subwatersheds.





Bullfrogs were heard in 16% of blocks which is average. They started calling on March 28 which is early. They were heard in all seven subwatersheds.





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# Rouge River Benthic Monitoring Program Spring 2019 Report

This report covers benthic macroinvertebrate monitoring at 16 sites on Rouge River tributaries and branches in the spring of 2019. In the absence of funding for the Spring Bug Hunt, Friends of the Rouge (FOTR) staff and Wayne County Department of Public Services Water Quality Management Division

**FRIENDS OF THE ROUGE BENTHIC MONITORING PROGRAM**  
 FOTR's benthic monitoring program was started in 2001 to involve a large number of volunteers in monitoring the health of the watershed by sampling the creeks of the Rouge River. The types and number of benthic macroinvertebrates found can be used to assess water quality. Each team of volunteers samples two sites under the direction of a trained team leader. Samples of each organism are collected and field identifications are verified in the lab. The program is funded by the Alliance of Rouge Communities and in cooperation with Wayne County Department of Public Services Water Quality Management Division.

sampled 16 sites with the assistance of FOTR volunteers Bill Eisenman, Steve Saia, Brian Frol, Paul Lukasiewicz, Clarence Johnson, and Jacob Sable and Rouge Education Project (REP) trainees and teachers. Schoolcraft College students also sampled Bell Creek on campus (Bell2). Due to high water levels, they were only able to find three organisms so the data for Bell2 was not included.

## Site Selection

With limited funding to sample sites, we chose four sites on each of the river's four major branches and included at least one tributary sampling for each branch. We only managed to sample three sites on the Upper.

### Stream Quality Index, Taxa, EPT and Sensitive Families

Each site is given a **Stream Quality Index (SQI)** which is determined by weighting each type and number of organisms found by their sensitivity ratings. A higher proportion of sensitive organisms such as mayflies and caddisflies results in a higher score. A number of different organisms also results in a high score. The SQI is then given a rating:

- >48 = EXCELLENT
- 34-48 = GOOD
- 19-33 = FAIR
- <19 = POOR

Number of **taxa** represents the number of different families of organisms. A higher number of taxa indicate a healthier site.

**EPT** refers to the number of mayfly, caddisfly and stonefly families found; these three orders contain some of the most sensitive organisms.

**Sensitive Families** refers to insects that are rated 1 on the Hilsenhoff Sensitivity Index.

## Overall Scores

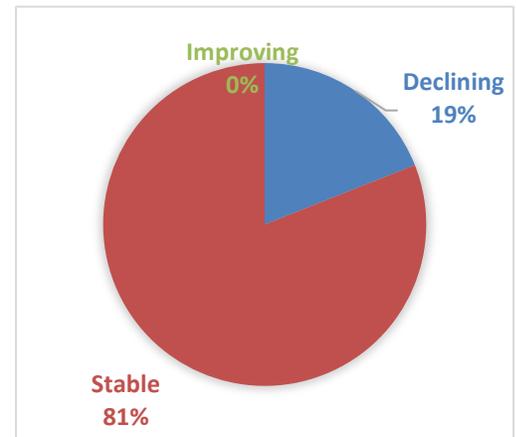
Forty-three percent of the sites (7/16) had FAIR Stream Quality Index scores (SQI) with an average score of 28 (Table 3 p. 6, map p. 5). Five sites rated GOOD and four sites had POOR scores. There were no EXCELLENT scores. The number of taxa at each site ranged from a low of seven at three sites to a high of 22 at one Middle Rouge site (MR-18). The number of EPT (see sidebar) ranged from zero at three sites to six at one site. The site with six was MR-18. Two sites had sensitive families (Fowl1 and MN-5), including Corydalidae at MN-5 and Leptophlebiidae, and Rhyacophilidae at Fowl1.

## Data Trends

We compared the spring 2019 scores to the average for each site. Of those, three sites (19%) scored below a standard deviation of the

mean, and thirteen (81%) were stable. No sites were improving.

To compare trends over time, we analyzed the trends in SQIs over time (Table 1, p. 7-10). The Middle 1 and the Middle 3 subwatersheds are showing significant positive trends. No other subwatershed had significant trends.



**Table 1: Data Trend Summary 2001-2019**

Branch	slope	p-value	True trend	Subwatershed average score	Water Quality Rating
Main 1-2	0.0875	0.4913	no trend	27	Fair
Upper	-0.1301	0.3127	no trend	24	Fair
Johnson Creek	0.0735	0.3318	no trend	39	Good
Middle 1	0.8724	0.00002	yes, positive	30	Fair
Middle 3	0.6080	0.0110	yes, positive	20	Fair
Lower 1	0.0440	0.7728	no trend	30	Fair
Lower 2	-0.1050	0.6097	no trend	26	Fair

In addition to the trend analysis by subwatershed, a site-by-site analysis of all the sites was done (Table 2). MR-22 was the only site with a significant trend and it was negative.

**Table 2: Spring Data Trends by site 2001-2019**

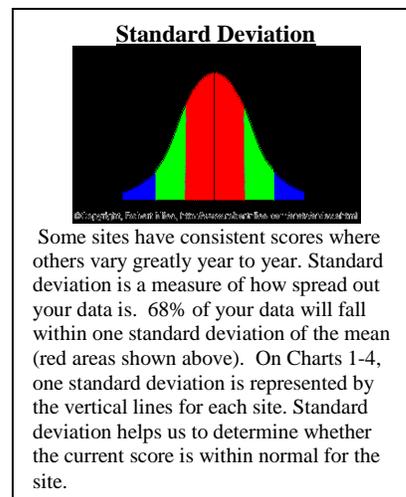
Branch	Site	p-value	Slope	True trend	Site average score	Water Quality Rating
Lower	Fowl1	0.3594	0.3435	no trend	35	Good
Lower	LR1	0.3537	0.3514	no trend	29	Fair
Lower	LR10	0.3491	-0.3932	no trend	26	Fair
Lower	LR12	0.0533	-2.6248	no trend	29	Fair
Main	Evan2	0.5898	0.9308	no trend	17	Poor
Main	Frank2	0.0910	-0.6408	no trend	23	Fair
Main	Main5	0.3411	0.3150	no trend	25	Fair
Main	MN5	0.2339	3.0000	no trend	40	Good
Middle	MR22	0.0395	-1.1049	yes, negative	40	Good
Middle	John1	0.5984	0.1457	no trend	45	Good
Middle	Ton1	0.3234	0.5233	no trend	40	Good
Middle	MR13	0.5151	-0.2448	no trend	22	Fair
Middle	MR18	0.6296	-0.4047	no trend	40	Good
Upper	Min3	0.2275	-0.8969	no trend	22	Fair
Upper	Up2	0.2927	-0.2718	no trend	20	Fair
Upper	UR4	0.6350	-0.4402	no trend	23	Fair

### Lower Branch

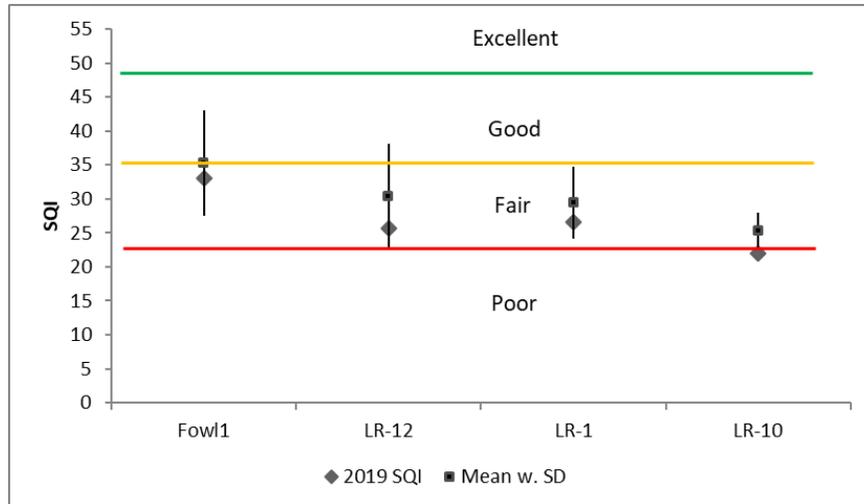
Four sites were sampled on the Lower Branch of the Rouge (see Table 3): Fowler Creek (Fowl1) and three main branch sites. All four scored FAIR (average 27). The number of taxa ranged from 9-14 and EPT 2-5. Two sensitive families were found at Fowl1: Prongill mayflies (Leptophlebiidae) and Free-living caddisflies (Rhyacophilidae).

The Lower1 and Lower 2 subwatersheds did not have significant trends though the slope was positive for the Lower 1 and negative for the Lower 2 (Table 1, graphs p. 7). In comparison to past data, one site (LR-10) was below a standard deviation of the mean (Chart 1). When analyzed by site (Table 2), LR-12 showed a declining trend for the second spring in a row but it was not significant.

Due to the outflow shutoff on the Lower last year, we calculated trends for sites upstream and downstream of the outflow but did not find any significant differences (graphs p. 8).



**Chart 1: Lower Branch SQI and Mean with Standard Deviation**



### Main Branch

Four sites on the Main Branch were sampled, including Evans Creek and Franklin Creek. One scored GOOD, one FAIR and two POOR with an average score of 25 (FAIR). The number of taxa ranged from 7-14 and EPT 0-2. One sensitive family was found: Dobsonflies (Corydalidae) at MN-5. The Main 1/2 subwatershed did not show any trend (Table 1, graph p. 8). In comparison with past data (Chart 2) two sites were below a standard deviation of the mean (Frank2, Main5). When analyzed by site (Table 2), no site had a significant trend though MN-5 had a very positive slope (3.000).

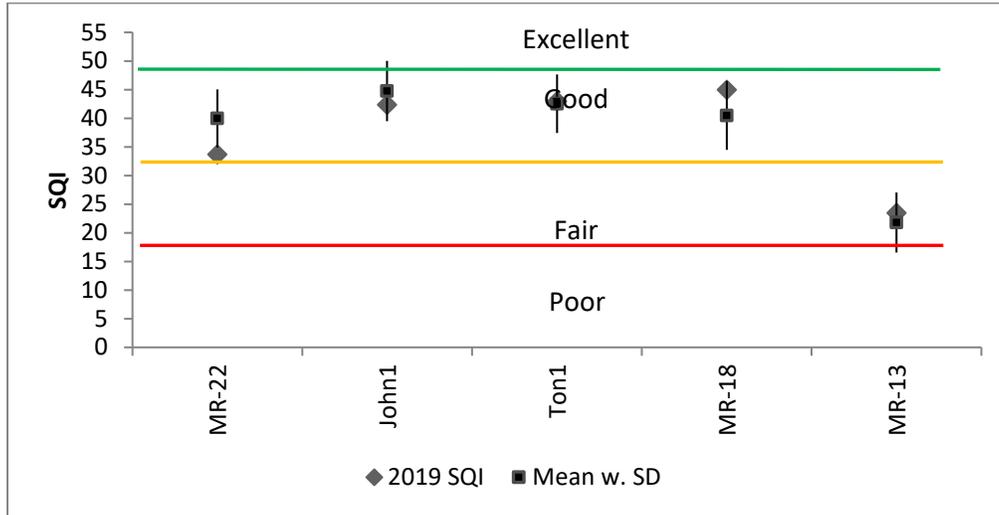
**Chart 2: Main Branch & Tributary SQI and Mean with Standard Deviation**



## Middle Branch

Five sites were sampled on the Middle branch including two tributaries: Johnson and Tonquish Creeks. The average score for the Middle Branch was GOOD (38). Four sites scored GOOD and one FAIR. The number of taxa ranged from 10-22 and EPT 2-6. No sensitive families were found. Average scores for the Middle1 and the Middle3 subwatersheds had significant positive trends (Table 1, graphs p. 9). In comparison with past data (Chart 3), all five sites were within a standard deviation of the mean for the site. When sites were analyzed individually, MR-22 had a significant negative trend (Table 2).

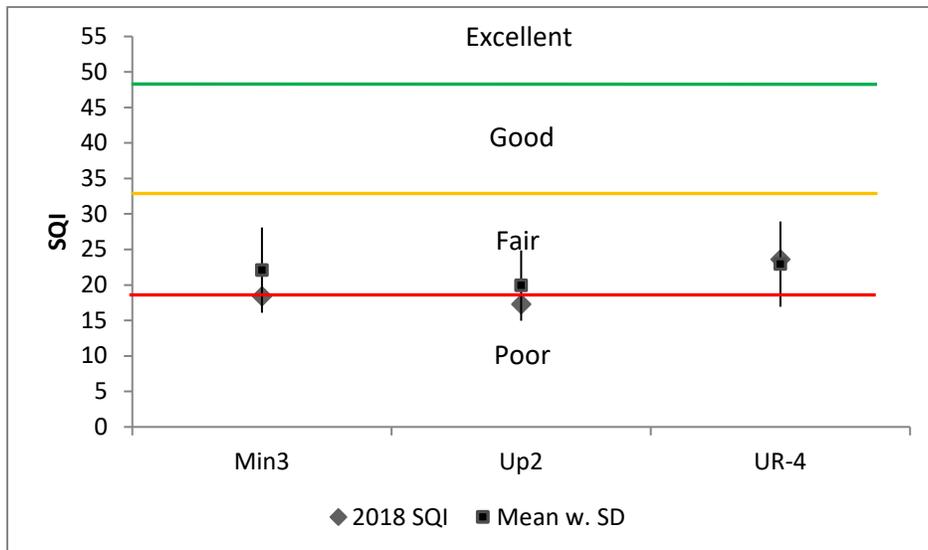
**Chart 3: Middle Branch & Tributary SQI and Mean with Standard Deviation**



## Upper Branch

Three Upper branch sites were sampled this spring, including Minnow Pond Creek. The average score for the Upper branch was FAIR (20) with one site scoring FAIR and two scoring POOR. The number of taxa ranged from 7-10 and EPT 0-2. No sensitive families were found. The Upper Subwatershed did not show any overall trend though the slope was negative (Table 1, graphs p. 10). In comparison to past data, all three sites were within a standard deviation of the mean (Chart 4). When sites were analyzed individually, all three had negative slopes but none were significant.

**Chart 4: Upper Branch SQI with Mean and Standard Deviation**



# 2019 Spring Stream Quality Index Scores

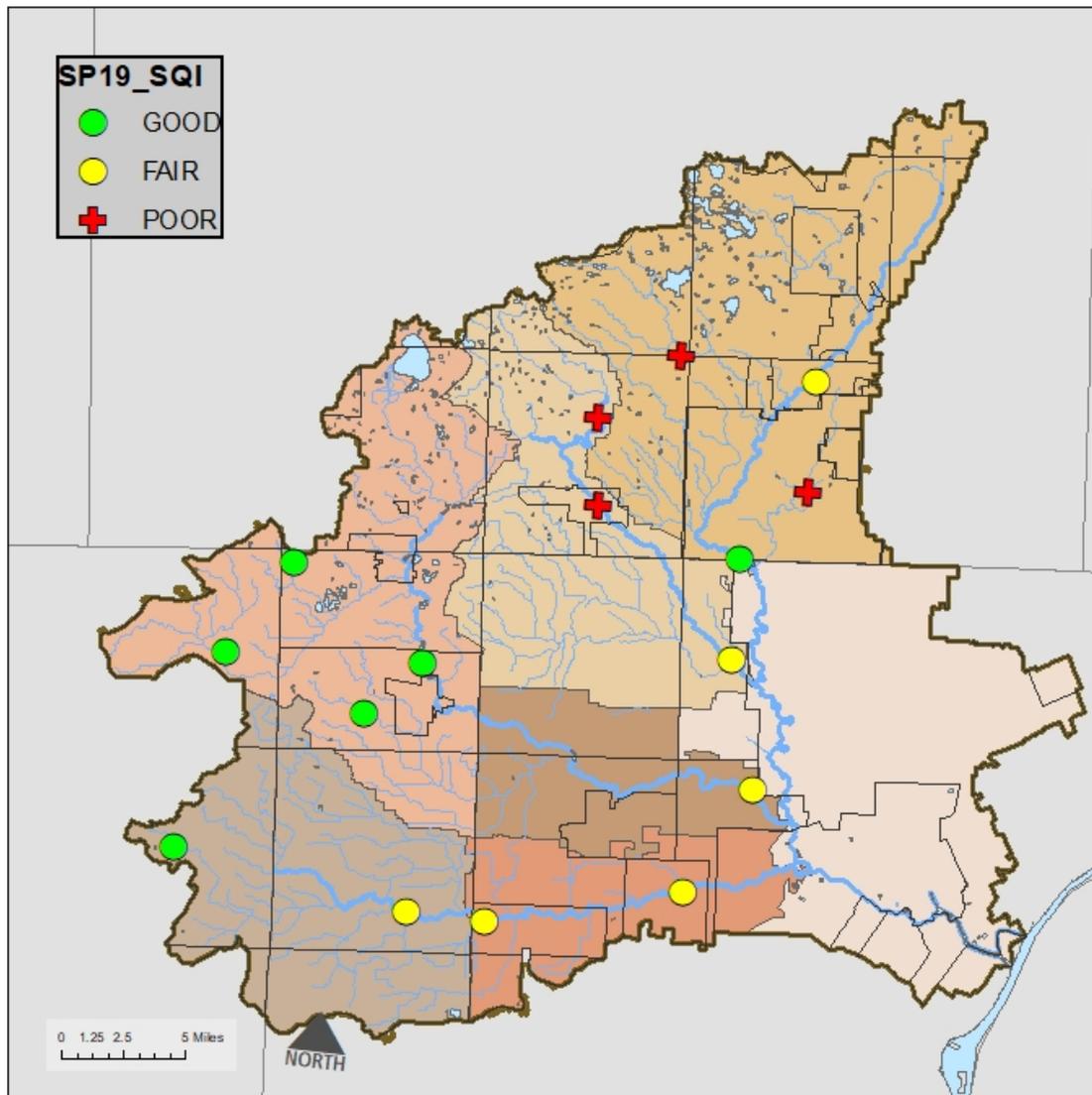


Table 3: Sites and Scores									
Stream Name	FIELDID	Site Description	Sampling Roads	org	SQI	score	taxa	EPT	Sens
<b>Lower Branch</b>									
Fowler Creek	Fowl1	Prospect	Prospect/Cherry Hill	FOTR	33.00	FAIR	14	5	2
Lower Rouge	LR-1	Commerce Ct	Michigan Ave, WCDOE	WC REP	26.60	FAIR	10	2	0
Lower Rouge	LR-10	John Daly	John Daly N of Michigan	FOTR	22.00	FAIR	9	2	0
Lower Rouge	LR-12	Morton Taylor	N of Michigan Ave	FOTR	25.60	FAIR	9	2	0
<b>Main Branch</b>									
Evans Creek	Evan2	LTU	10 Mile/Northwestern	FOTR	18.30	POOR	7	0	0
Franklin Creek	Frank2	Ink Pump Sta	Inkster & Farmington	FOTR	13.30	POOR	7	0	0
Main Rouge	Main5	Douglas Evans	Evergreen/13 Mile	WC FOTR	29.10	FAIR	12	1	0
Main Rouge	MN-5	Bridge St	Bridge w of Telegraph	WC FOTR	39.30	GOOD	14	2	1
<b>Middle Branch</b>									
Johnson Creek	MR-22	Maybury south	7 Mile N & Napier	ST	33.70	GOOD	15	3	0
Johnson Creek	John1	5M Salem	5 Mile/Salem Rd	WC FOTR	42.40	GOOD	18	4	0
Tonquish Creek	Ton1	Plym Twp Pk	Beck/Ann Arbor Tr	REP	42.60	GOOD	20	4	0
Middle Rouge	MR-18	Springbrook Rec	E of M-14 on Hines	WC FOTR	45.40	GOOD	22	6	0
Middle Rouge	MR-13	Warrendale	Hines/Warren	WC FOTR	23.50	FAIR	10	2	0
<b>Upper Branch</b>									
Minnow Pond	Min3	Dunckel	12 Mile/OL	REP	18.40	POOR	9	0	0
Upper Rouge	Up2	Shiawasee Park	Shiawasee/Power	WC FOTR	17.30	POOR	7	1	0
Upper Rouge	UR-4	5M Beech Daly	east of Inkster	WC FOTR	23.60	FAIR	10	2	0

Thank you to all the **volunteers, Wayne County** for sampling and doing the trend analysis, **Sue Thompson** for sampling additional sites, **Erin Cassady** and the **Rouge Education Project** for providing data, **Diane O'Connell** and **Schoolcraft College** students for sampling one site.

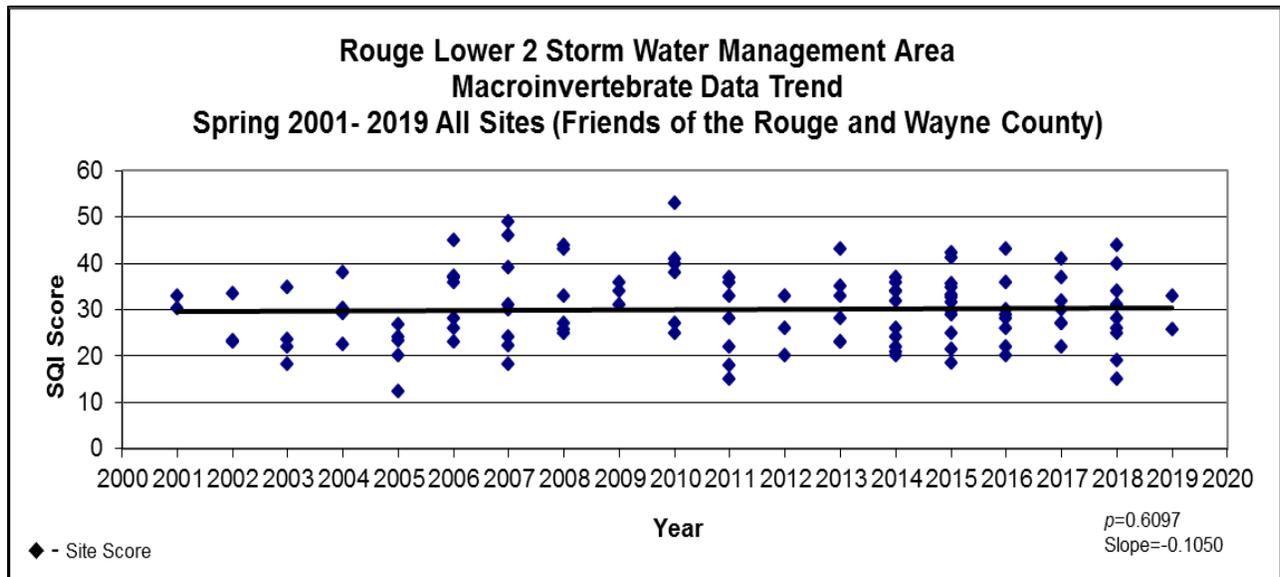
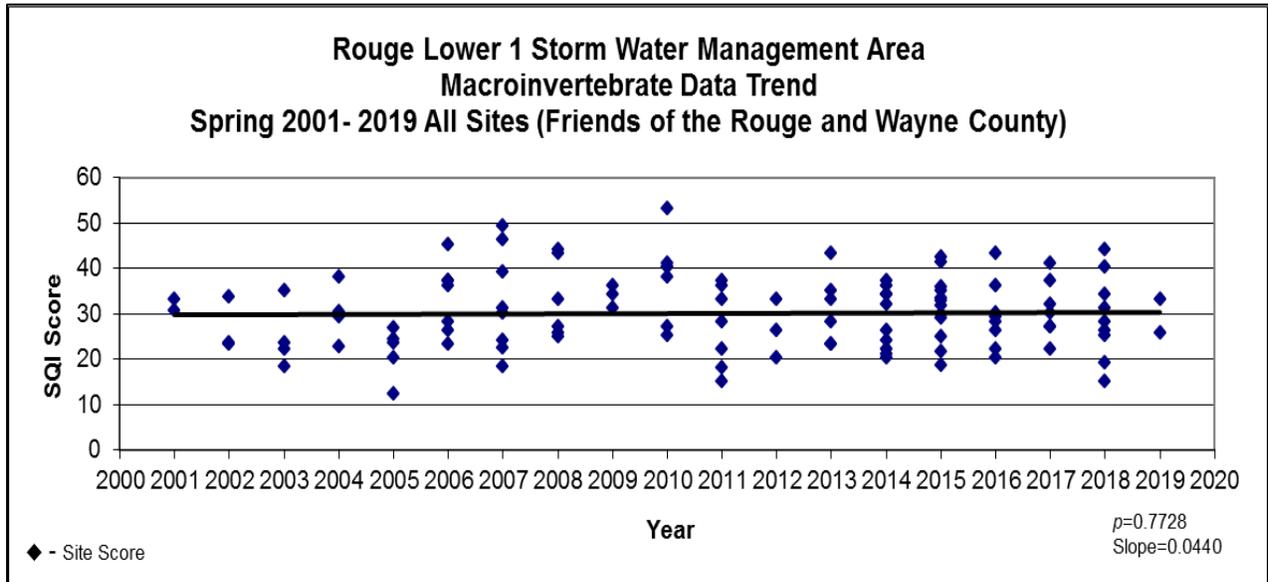
This program is supported by the Erb Family Foundation, Washtenaw County, Bosch, the City of Southfield, the Alliance of Rouge Communities and a donation from John Berger.

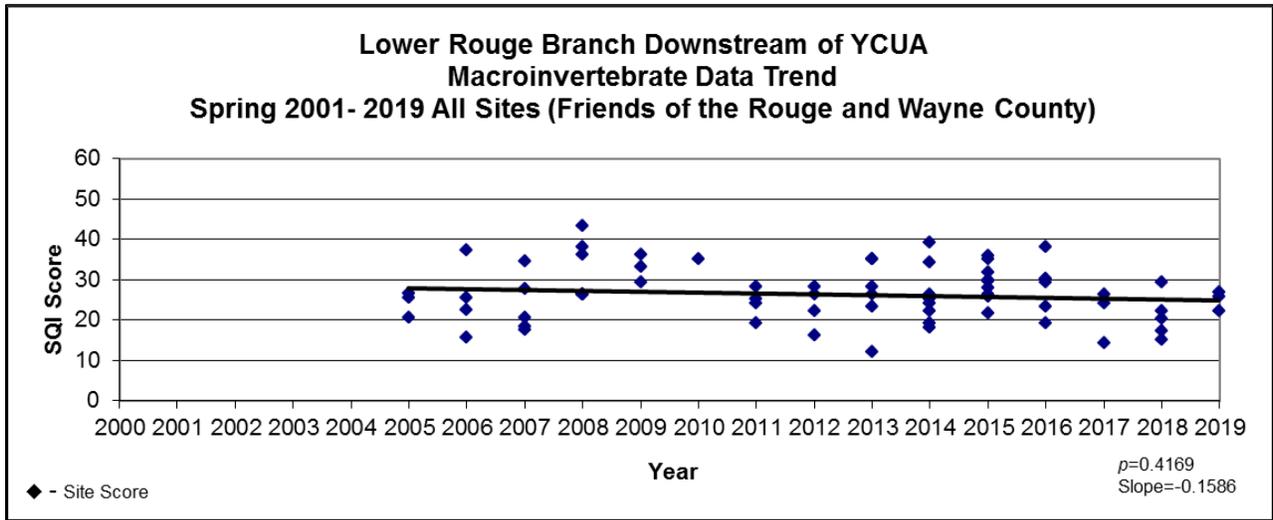
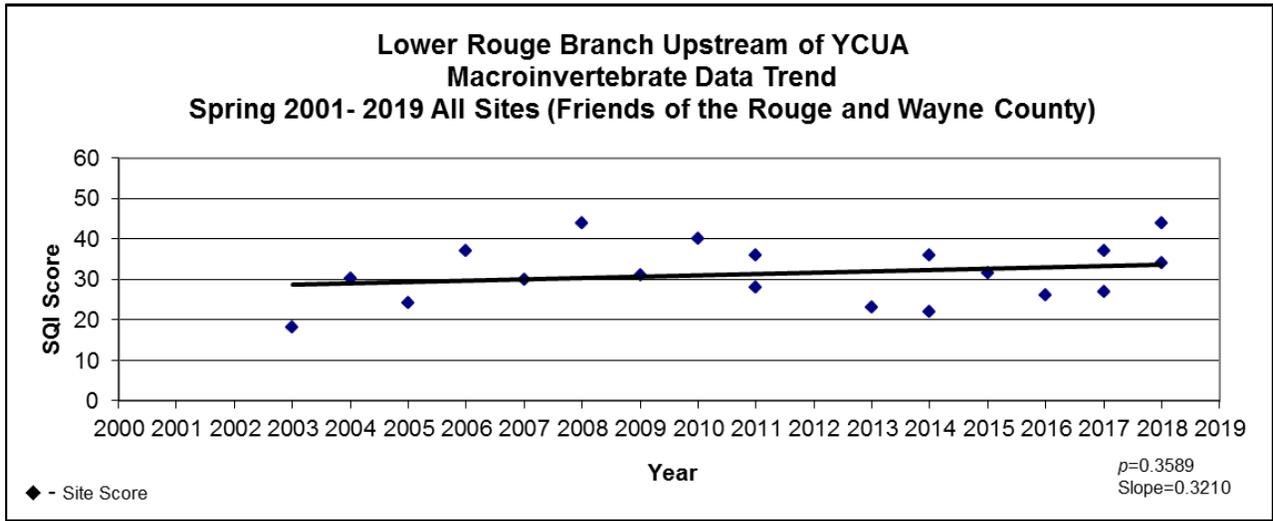
**Fall Bug Hunt**  
**Oct. 19, 2019 9am-4pm**  
**Schoolcraft College VisTaTech Center**

**Sign up online today (deadline Oct. 11, 2019 at [www.therouge.org](http://www.therouge.org))**  
**Team Leader Training – Sat. Sept. 28, 2019 9am-2pm (must have participated in a previous event)**

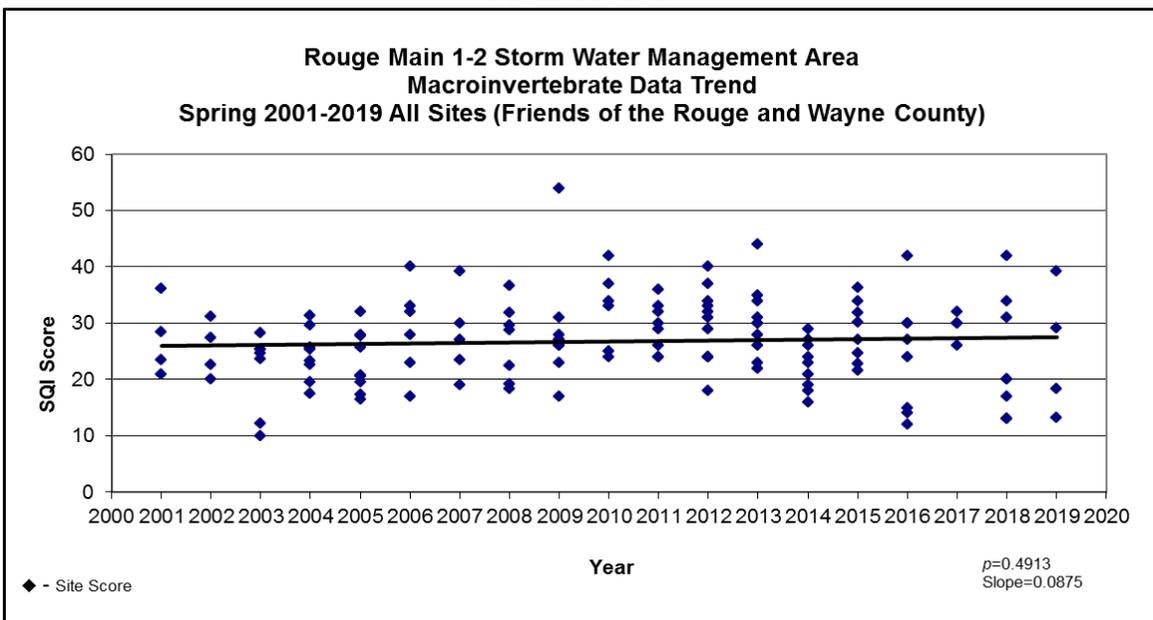
# Trend Graphs

## Lower Branch

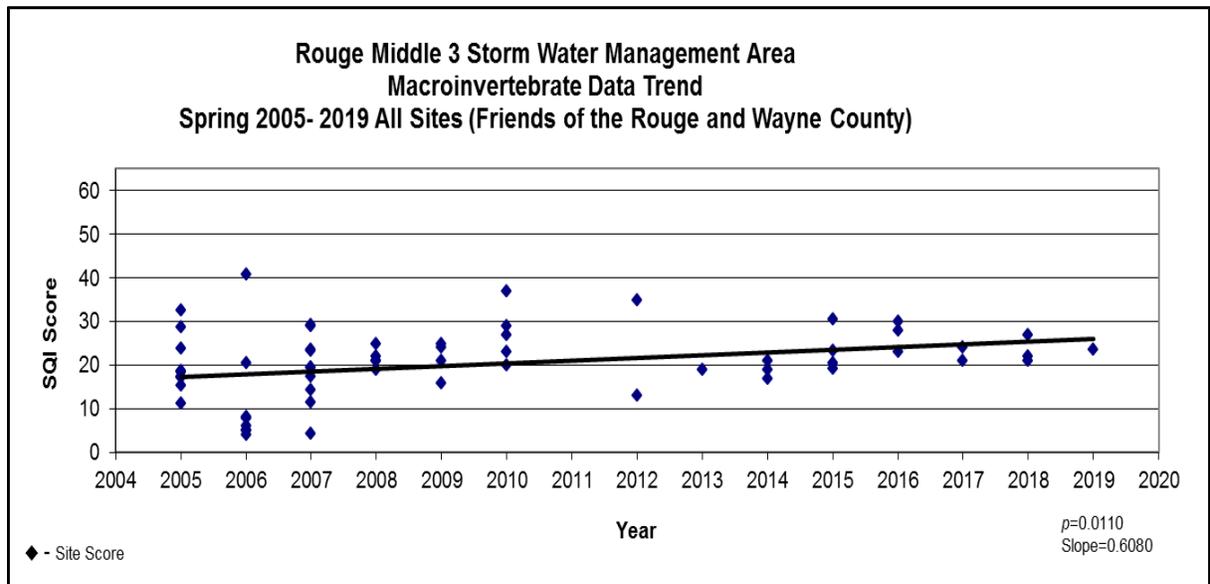
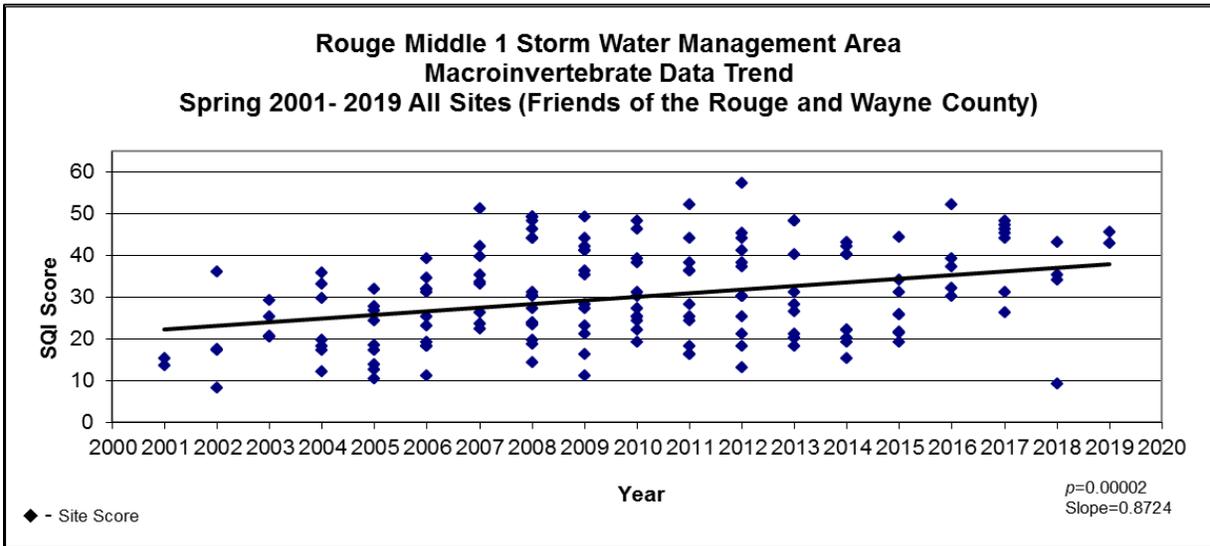
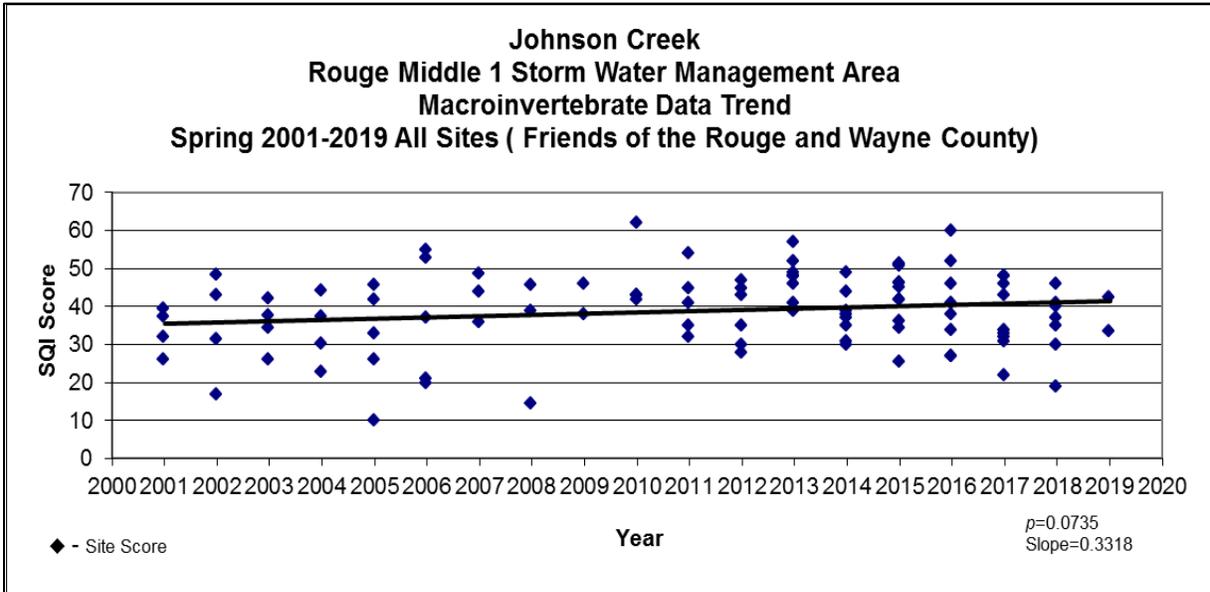




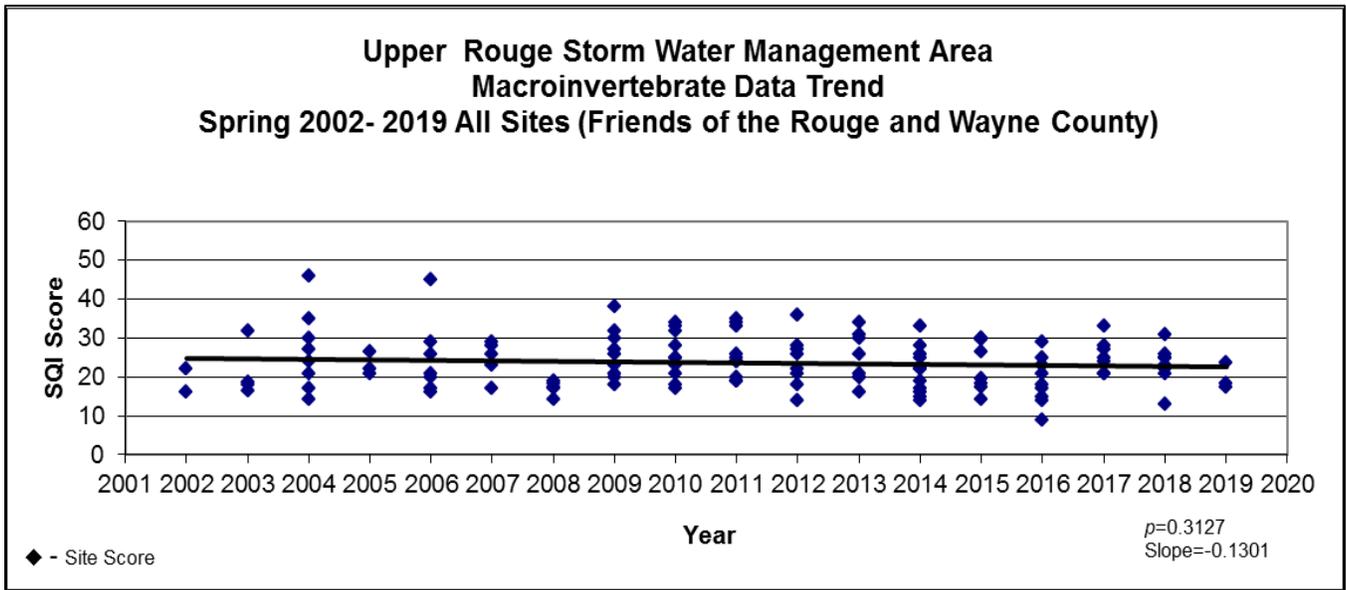
## Main Branch



## Middle Branch



# Upper Branch





# Rouge River Watershed 2019 Winter Stonefly Search

[www.therouge.org](http://www.therouge.org)

Seventy-four volunteers participated in Friends of the Rouge's 2019 Winter Stonefly Search on January 26. It was cold day, starting out around 8°F at 9:00 am and reaching 19°F later in the day with some welcome sun. The following week, Michigan went into the deep freeze with temps as low as -15°F, making 19° seem relatively warm. The event was held at the Plymouth Arts and Recreation Complex where the Friends of the Rouge office is now located.

*Stoneflies are sensitive indicators of healthy streams. Unlike other insects, winter stoneflies develop into adult flies in the winter. The Winter Stonefly Search is part of Friends of the Rouge volunteer benthic macroinvertebrate monitoring program.*

Prior to the event, we held a Stonefly Refresher for the first time on January 12. Twenty team leaders and volunteers got a chance to learn more about stoneflies in the comfort of our new lab, funded by Bosch. The training was well received and we plan to repeat it next year if funding allows. Thank you to Sue Thompson for co-leading it.

Volunteers Bill Craig and Martha Gruelle (a former team leader who moved out of state but came back to volunteer!) came early to set up the room and Martha and Daisy Lovain ran registration. Participating teams included Wayne State University, Plymouth-Canton Community Schools Eco Club and Fordson High School Eco Club.

This report contains data for a total of 33 sites. During the Stonefly Search, eleven volunteer teams sampled 21 sites. An additional six sites were sampled by Wayne County Department of Public Services Water Quality Management Division, one site on Bell Creek by Schoolcraft College students, and five sites on Johnson Creek by Sue Thompson.

Stoneflies were found at fourteen of the thirty-three sites (42%) (map and Table 1), an average percentage of sites. All stoneflies were found on the Middle or Lower branches with the exception of one stonefly found in the Upper Branch (Up1). All stoneflies found were slender winter stoneflies (Capnids-family Capniidae) with the exception of one site that also had Perlodids (family Perlodidae). This was John8, sampled by Sue Thompson and sorted by participants in our first Stonefly Refresher.

On the Lower Branch, three of the eight sites had stoneflies (38%). Two were in Fellows Creek and one was in Fowler Creek. None were found downstream of these tributaries.

On the Middle Branch, twenty sites were sampled: twelve on Johnson Creek, two on Tonquish Creek and six on the Middle branch. Half (ten) of the sites had stoneflies and all were on the Johnson Creek. Of the twelve Johnson Creek sites, two did not have stoneflies: MR-26 and John6. These two sites are located at opposite ends of the Johnson Creek: MR-26 is near the top of Sump Drain that drains into Johnson Creek while John6 is at Seven Mile Road, just upstream of where the Walled Lake branch and Johnson Creek come together to form the Middle Rouge.

Only one site on the Main Branch was sampled for stoneflies and none were found. The site was MN-5, near Eight Mile Road.

Four Upper Branch sites were sampled and stoneflies were found at one site (25%). This was Up1, Heritage Park. They were also found there last year after last being seen in 2010. None were found in Bell Creek or further downstream on the Upper branch.

Thank you to all the volunteers, Team Leaders, Registration and set-up volunteers, Schoolcraft College, Wayne County and Sue Thompson for additional sampling. Thank you to photographers

Chester Marvin, Thomas Morris, Marie McCormick, Scot Martin, and Charlie Usher. The Winter Stonefly Search is part of the Friends of the Rouge long term volunteer monitoring program. The Annual Spring Bug Hunt will not be held in 2019 due to lack of funding.

## Fall Bug Hunt: Sat. October 19 9am-4 pm

\*Register by 10/4\*

**Team Leader Training Sept. 28** (must have previously attended an event)

[www.therouge.org](http://www.therouge.org) (register online)

(724) 927-4904 [spetrella@therouge.org](mailto:spetrella@therouge.org)

Coordinated by Friends of the Rouge and funded by the Erb Family Foundation, Washtenaw County, Clif Bar Family Foundation and contributions from participants and supporters. Additional data collection by Wayne County and Schoolcraft College.



# 2019 Winter Stonefly Search

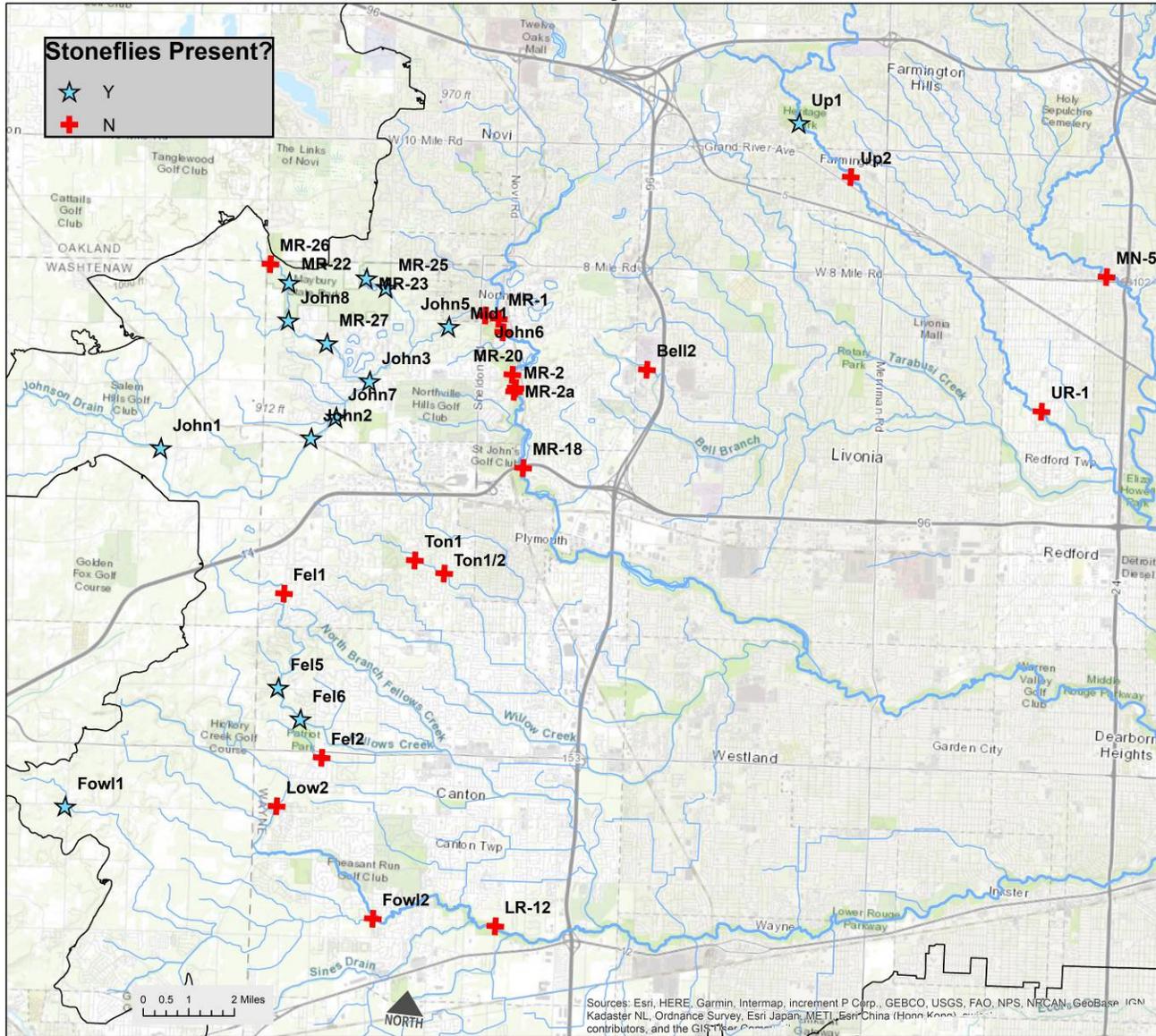


Table 1: 2019 Stonefly Search Results

BRANCH	FIELDID	Stream Name	Site Description	Collector	ST19	ST19Family
Lower	Fel1	Fellows Creek	Top of Hill Ct	1	N	
Lower	Fel5	Fellows Creek	Warren Ridge	1	Y	Capnids
Lower	Fel6	Fellows Creek	Hanford	5	Y	Capnids
Lower	Fel2	Fellows Creek	Vintage Valley	5	N	
Lower	Fowl1	Fowler Creek	Prospect	6	Y	Capnids
Lower	Fowl2	Fowler Creek	Fowler Beck	6	N	
Lower	Low2	Lower Rouge	Cherry Hill	3	N	
Lower	LR-12	Lower Rouge	Morton Taylor	WC	N	
Main	MN-5	Main Rouge	Bridge St	WC	N	
Middle	John1	Johnson Creek	5M Salem	7	Y	Capnids
Middle	John2	Johnson Creek	5M NV	7	Y	Capnid
Middle	John7	Johnson Creek	Arcadia	8	Y	Capnids
Middle	MR-26	Johnson Creek	Napier Rd	ST	N	
Middle	MR-22	Johnson Creek	Maybury south	ST	Y	Capnids
Middle	John8	Johnson Creek	Maybury Angell	ST	Y	Capnids, Perlodids
Middle	MR-27	Johnson Creek	Ridge	9	Y	Capnids
Middle	John3	Johnson Creek	6M NV	8	Y	Capnids
Middle	MR-23	Johnson Creek	Maybury north	ST	Y	Capnids
Middle	MR-25	Johnson Creek	Maybury East	ST	Y	Capnids
Middle	John5	Johnson Creek	Fish Hatchery Pk	9	Y	Capnids
Middle	John6	Johnson Creek	Hines	10	N	
Middle	Ton1	Tonquish Creek	Plym Twp Pk	2	N	
Middle	Ton1/2	Tonquish Creek	Canton Ctr Rd	2	N	
Middle	MR-1	Middle Rouge	Northville Rec W	10	N	
Middle	Mid1	Middle Rouge	Northville Rec E	11	N	
Middle	MR-20	Middle Rouge	Waterford Bd	WC	N	
Middle	MR-2a	Middle Rouge	Reservoir Rd W	WC	N	
Middle	MR-2	Middle Rouge	Reservoir Rd	WC	N	
Middle	MR-18	Middle Rouge	Springbrook Rec	11	N	
Upper	Bell2	Bell Branch	Schoolcraft College	SCH	N	
Upper	Up1	Upper Rouge	Heritage Park	4	Y	Capnids
Upper	Up2	Upper Rouge	Shiawasee Park	4	N	
Upper	UR-1	Upper Rouge	Lola Valley	WC	N	