

Appendix L

Friends of the Rouge Report Summaries

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2019 Fall Bug Hunt Report



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Rouge River Benthic Macroinvertebrate Monitoring Program Fall 2019 Report

This report contains benthic macroinvertebrate sampling results from 31 Rouge tributary and river sites. The Fall Bug Hunt on October 19, 2019 had 76 attendees that sampled 20 sites in 10 teams. Groups participating included Wayne State University, Plymouth Canton Community Schools, Cub Scout Pack 247 and New Morning School. The Schoolcraft College Geography Department once again provided the meeting space and refreshments and

volunteer Daisy Lovain ran the registration with assistance from four Schoolcraft Ambassadors.

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

Overall Scores

Of the 31 sites sampled this fall, the average Stream Quality Index (SQI) was FAIR (28) (map p.5, Table 1 & 5). Sites averaged 11 taxa and 2 EPT. One site had an EXCELLENT SQI – John1. Seven sites rated GOOD; 18 sites were FAIR and five sites scored POOR. The number of taxa found at sites was highest at John1 and John2 (20) and lowest at Bell2 (5).

Table 1: Averages

Average SQI	Average # of taxa	Average # EPT	Average # Sensitive Families
28	11	2	0

Some mayfly, stonefly and caddisfly families (EPT) were found at all but one site with an average of 2 of these families per site. Two sites had the highest number of EPT (5) – John1 and MR-3. Only one site had a sensitive family: prongbill mayflies (Leptophlebiidae) at MR-22.

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

Chart 1: Trends for Sites with Past Data



All thirty-one sites sampled had three or more years of past data. Of these, 84% were stable, 13% were improving and 3% were declining (Chart 1). Compared to last fall, a higher percentage of sites are stable and fewer are declining.

To compare change over time, we analyzed the trends by subwatershed, with Johnson Creek analyzed separately as it is a coldwater tributary (Table 2 and p. 7-11). The Middle 3 subwatershed and Johnson Creek had significant positive trends. The Main 1-2, the Upper and the Lower 1 subwatersheds had significant negative trends.

Table 2: Fall Bug Hunt trend summary All Sites 2001-2019					
Subwatershed	slope	p-value	True trend	Subwatershed average score	Water Quality Rating
Main 1-2	-0.3562	0.0188	yes, negative	30	Fair
Upper	-0.3805	0.0006	yes, negative	24	Fair
Johnson Creek	0.4254	0.0114	yes, positive	35	Good
Middle 1	-0.1768	0.2645	No trend	32	Fair
Middle 3	0.4603	0.0007	yes, positive	22	Fair
Lower 1	-0.4412	0.0042	yes, negative	28	Fair
Lower 2*	-0.3116	0.1007	no trend	26	Fair
Main3-4*	-0.5329	0.2181	no trend	28	Fair
* no sites sampled in fall 2019					

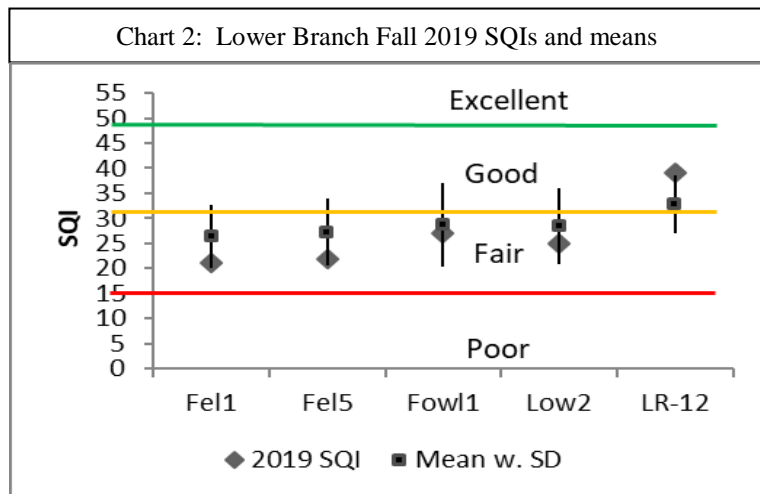
The data was further analyzed for trends by combining the data for the branches with subareas (Main 1-2 combined with Main 3-4, Lower 1 with Lower 2, and Middle 1 and Middle 3, respectively) and looking at two creeks separately (Bell and Tonquish). Table 3 contains a summary of this analysis; the graphs are on p. 7-11. The Main, Upper and Lower had significant declining trends while the Johnson Creek and Middle Rouge were improving. No trends were seen for Bell or Tonquish Creeks.

Table 3: Fall Bug Hunt trend summary combined branches 2001-2019					
Branch	slope	p-value	True trend	Branch average score	Water Quality Rating
Main combined (Main 1/2 and Main 3/4)	-0.3824	0.0007	yes, negative	29	Fair
Bell Creek only	-0.0816	0.6533	no trend	23	Fair
Upper only	-0.426	0.034	yes, negative	26	Fair
Middle 1 and 3 combined	0.1485	0.2930	no trend	29	Fair
Tonquish Creek only	0.1330	0.6444	no trend	31	Fair
Johnson Creek and Middle Rouge	0.3120	0.0040	yes, positive	31	Fair
Lower 1 and Lower 2 combined	-0.4277	0.0004	yes, negative	27	Fair

Individual sites were examined for long term trends (Table 4). Of the sites sampled in fall 2019, five had significant trends. John2 is improving while the four other sites are declining.

Table 4: Friends of the Rouge and Wayne County Fall Bug Hunt Trend Summary 2001-2019 by site					
Site	slope	p-value	Statistically significant trend	Average SQI	Water Quality Rating
Bell2	-0.8947	0.0155	yes, negative	24	Fair
John2	1.1043	0.0233	yes, positive	38	Good
Bish2	-1.1984	0.0413	yes, negative	23	Fair
Ing1	-1.5661	0.0216	yes, negative	28	Fair
Low2	-0.8808	0.0468	yes, negative	28	Fair

Lower Branch



Five sites were sampled on the Lower Branch (Table 5), including two tributaries: Fellows and Fowler Creeks. SQIs averaged FAIR (27). One site scored GOOD, four FAIR.

In comparing averages and past data (Chart 2), all five sites were within a standard deviation of the average for the site. Long term trend analysis showed a significant negative trend for the Lower 1 and for all of the Lower when the subwatersheds are combined (Table 2-3 above, graphs p. 11).

The Low2 site had a significant negative trend (Table

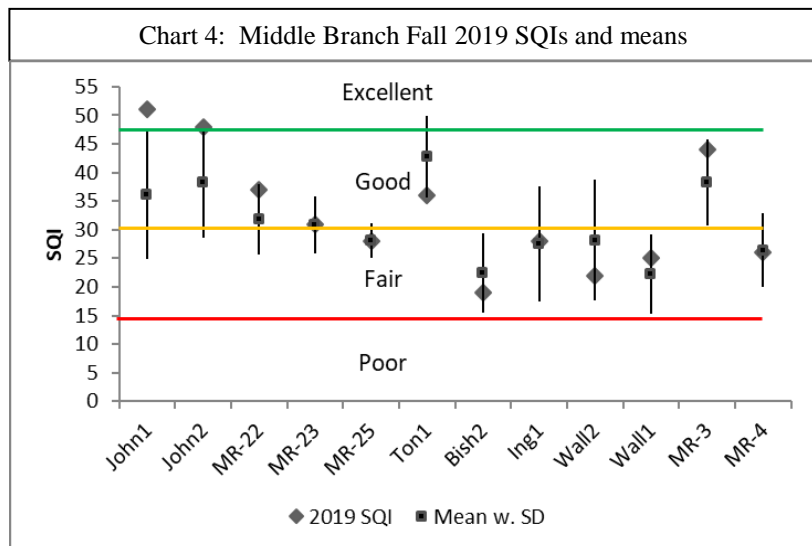
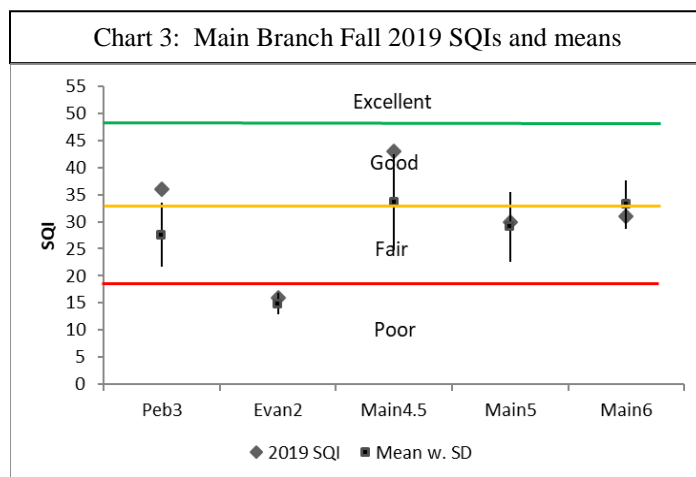
4). This site has changed dramatically this year as a subdivision is being built on the west side of the river and the pedestrian bridge at the site is becoming a road bridge.

Main Branch

Five sites on the Main Branch were sampled, including two tributaries: Pebble and Evans Creeks. SQIs averaged FAIR (31). There were two GOOD, two FAIR, and one POOR SQIs. No sites were sampled in the Main 3-4.

In comparing averages and past data (Chart 3), two sites were above a standard deviation of the mean (Peb3 and Main 4.5). The rest were within a standard deviation of the mean. Long term trend analysis shows a significant negative trend for the Main 1-2 subwatershed as well as for all of the Main when the subwatersheds are combined (Table 2-3 above, graphs p. 7).

No sites considered separately had significant trends (Table 4).



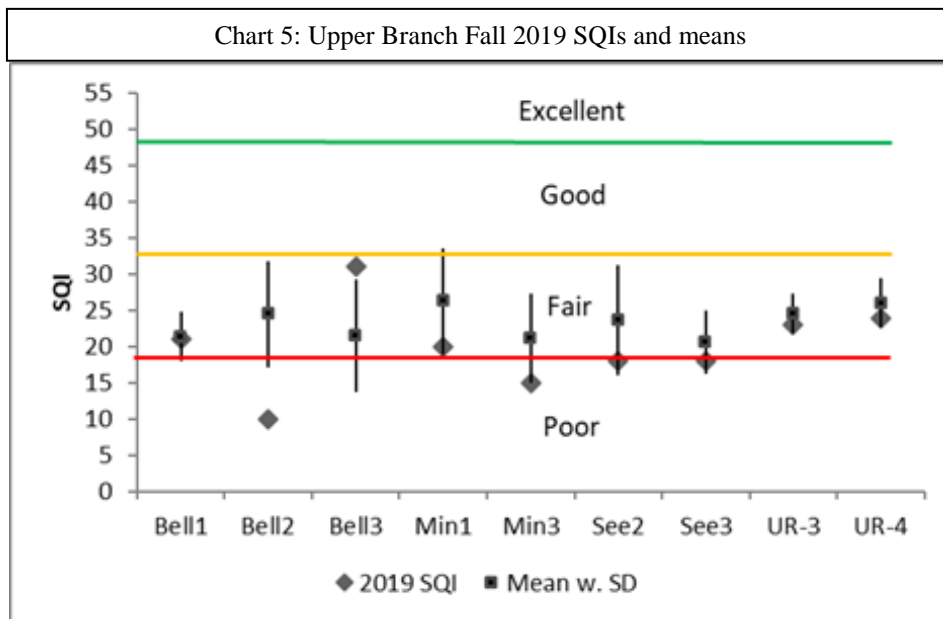
Middle Branch

Twelve sites were sampled on the Middle Branch including Johnson (5), Tonquish (1) and the Walled Lake drainage (4 – includes Bishop and Ingersoll Creeks). SQI scores averaged FAIR (33). There was one EXCELLENT score, four GOOD, and seven FAIR SQIs.

In comparing averages and past data (Chart 4), one site was above a standard deviation of the mean (John1) and all the rest were within a standard deviation of the mean.

In long term trend analysis, the Middle 3 and Johnson Creek had positive trends (Table 2 above, graphs p. 9-10). When the Middle 1 and Middle 3 subwatersheds were combined, there was no significant trend (Table 3 above, graphs p. 9-10). When Johnson Creek was combined with the Middle branch, there was a significant positive trend. Bish2 and Ing1 had negative trends by site while John2 had a positive trend (Table 4).

Upper Branch



Nine Upper branch sites were sampled including Bell, Minnow Pond, Seeley and Tarabusi Creeks. SQIs averaged FAIR (20). Five sites were FAIR and four POOR.

In comparing averages and past data (Chart 5), one site was above a standard deviation of the mean (Bell3) and one site was below (Bell2). Long term trend analysis shows a significant decline in scores since 2001 (Table 2 & 3, graphs p.8). Bell2 had a significant negative trend by site.

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 **Schoolcraft Ambassadors** for running registration, **Wayne County** for sampling and providing data for 5 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, and the **Alliance of Rouge Communities**, the **Erb Family Foundation**, **Washtenaw County Water Resources Department**, the **Cities of Southfield and Livonia** and **individual donations** for funding the program.

Join us for the Winter Stonefly Search

Sat. Jan. 25, 2020 9 am – 3 pm

at the Plymouth Cultural Center, 525 Farmer, Plymouth, MI 48170

Register at www.therouge.org by Jan. 10, 2020

Stonefly Refresher Sat. Jan. 11 10am-12pm at PARC

2019 Fall Bug Hunt SQIs

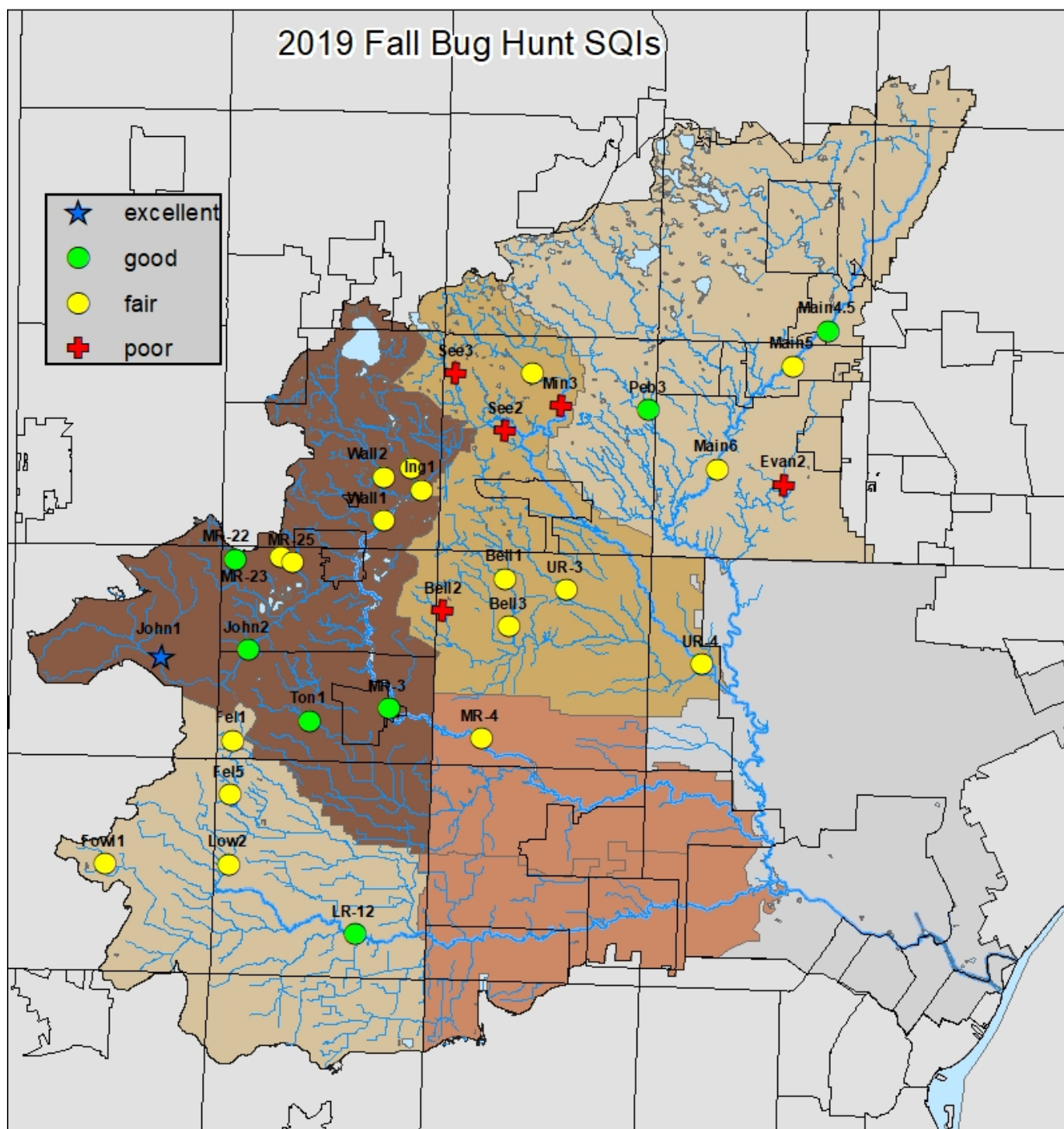
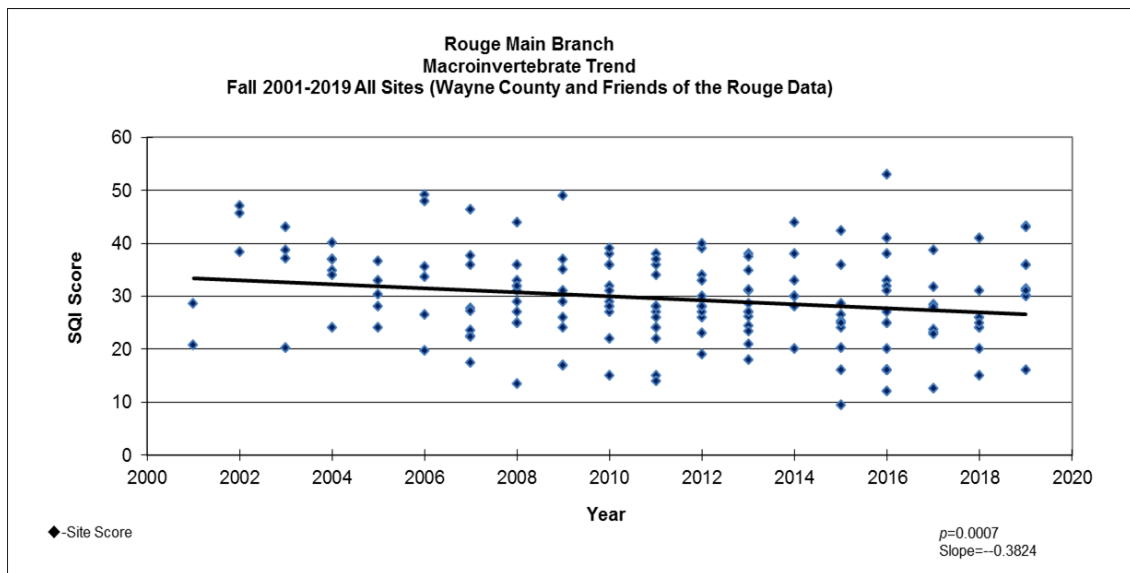
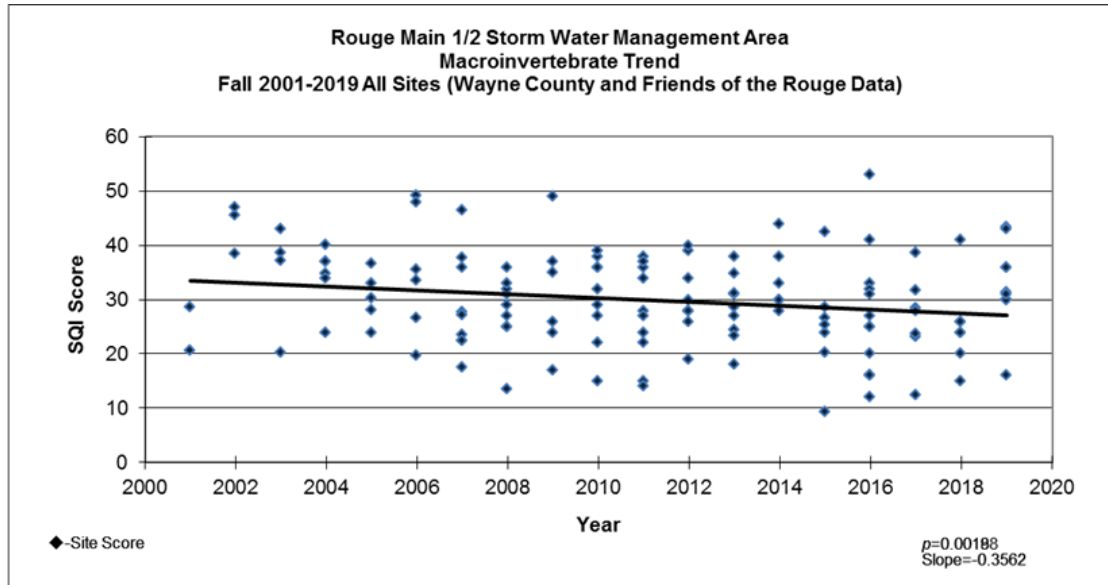


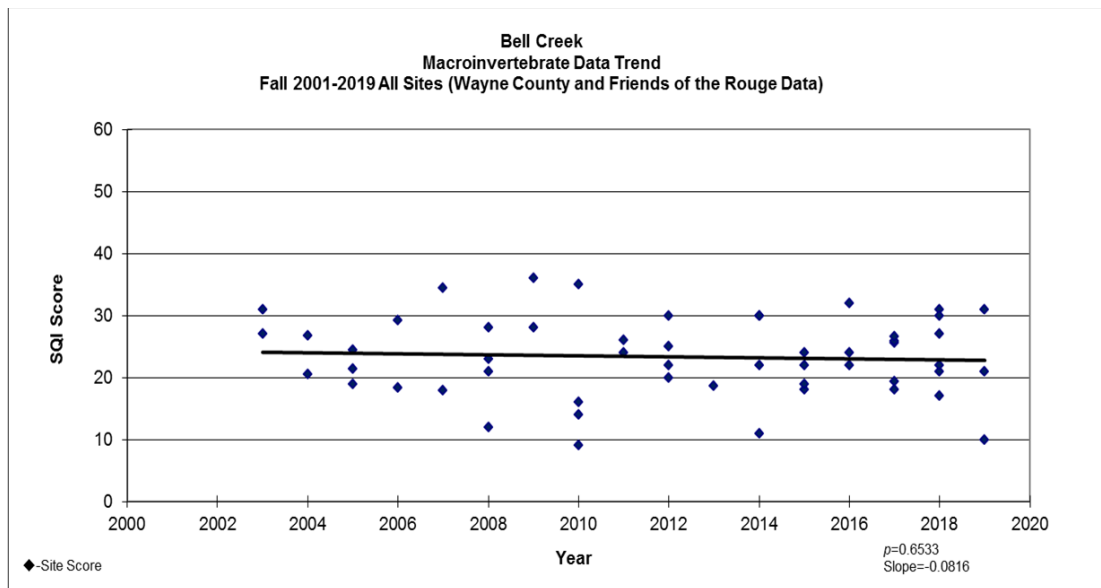
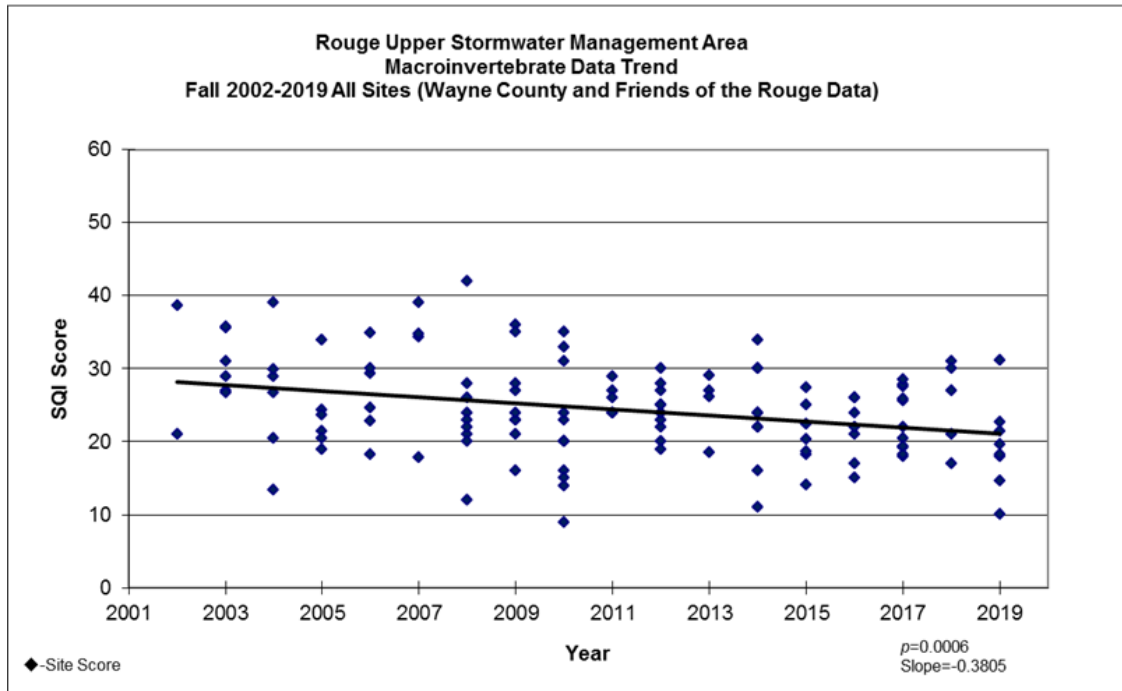
Table 5: Fall 2019 Data									
BRANCH	FIELDID	Stream Name	Site Description	Collector	SQL	score	#Taxa	#EPT	#Sens
Lower Branch									
Lower	Fel1	Fellows Creek	Top of Hill Court	FOTR	21	fair	6	2	0
Lower	Fel5	Fellows Creek	Warren Ridge	FOTR	22	fair	7	1	0
Lower	Fowl1	Fowler Creek	Prospect	FOTR	27	fair	10	2	0
Lower	Low2	Lower Rouge	Cherry Hill	FOTR	25	fair	13	3	0
Lower	LR-12	Lower Rouge	Morton Taylor	WC	39	good	14	2	0
Main Branch									
Main	Evan2	Evans Creek	LTU	FOTR	16	poor	9	1	0
Main	Peb3	Pebble Creek	Pebble d/s Dam	ST	36	good	15	1	0
Main	Main4.5	Main Rouge	Fairway Pk	FOTR	43	good	15	3	0
Main	Main5	Main Rouge	Douglas Evans	FOTR	30	fair	13	2	0
Main	Main6	Main Rouge	Sfld Civic Ctr	FOTR	31	fair	15	2	0
Middle Branch									
Middle	Bish2	Bishop Creek	Bishop Scarborough	FOTR	19	fair	7	1	0
Middle	Ing1	Ingersoll Creek	Brookfarm Park	FOTR	28	fair	12	1	0
Middle	John1	Johnson Creek	5M Salem	FOTR	51	excellent	20	5	0
Middle	John2	Johnson Creek	5M NV	FOTR	48	good	20	2	0
Middle	MR-22	Johnson Creek	Maybury south	ST	37	good	16	3	1
Middle	MR-23	Johnson Creek	Maybury north	ST	31	fair	14	2	0
Middle	MR-25	Johnson Creek	Maybury East	ST	28	fair	12	2	0
Middle	Ton1	Tonquish Creek	Plym Twp Pk	FOTR	36	good	17	4	0
Middle	Wall2	Walled Lk Drainage	WL 10 M	FOTR	22	fair	8	1	0
Middle	Wall1	Walled Lk Drainage	Rotary Pk	FOTR	25	fair	9	1	0
Middle	MR-3	Middle Rouge	Plym Riverside	WC	44	good	18	5	0
Middle	MR-4	Middle Rouge	Levan Knoll	WC	26	fair	10	3	0
Upper Branch									
Upper	Bell1	Bell Branch	Bicentennial Park	FOTR	21	fair	12	1	0
Upper	Bell2	Bell Branch	Schoolcraft College	SCH	10	poor	5	0	0
Upper	Bell3	Bell Branch	Livonia 6 Mile	FOTR	31	fair	12	2	0
Upper	Min1	Minnow Pond	Minnow 13 M	FOTR	20	fair	7	2	0
Upper	Min3	Minnow Pond	Farm. STEAM Academy	FOTR	15	poor	6	1	0
Upper	See3	Seeley Creek	Kennedy Ct	FOTR	18	poor	6	1	0
Upper	See2	Seeley Creek	Sleepy Hollow	FOTR	18	poor	6	1	0
Upper	UR-3	Tarabusi Creek	Tara 7 M	WC	23	fair	8	2	0
Upper	UR-4	Upper Rouge	5M Beech Daly	WC	24	fair	10	3	0

Data Trend Tables

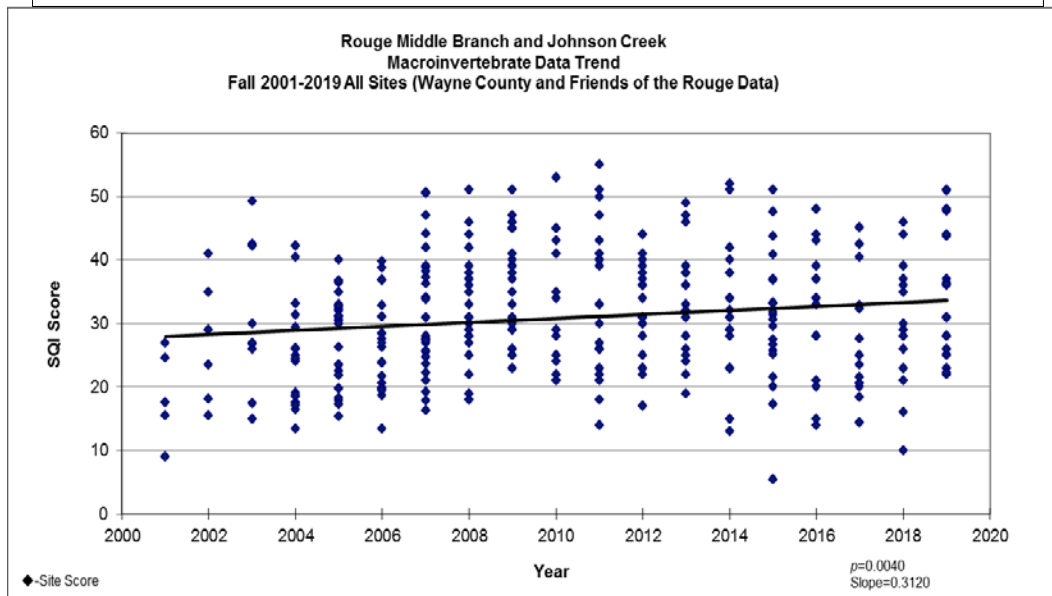
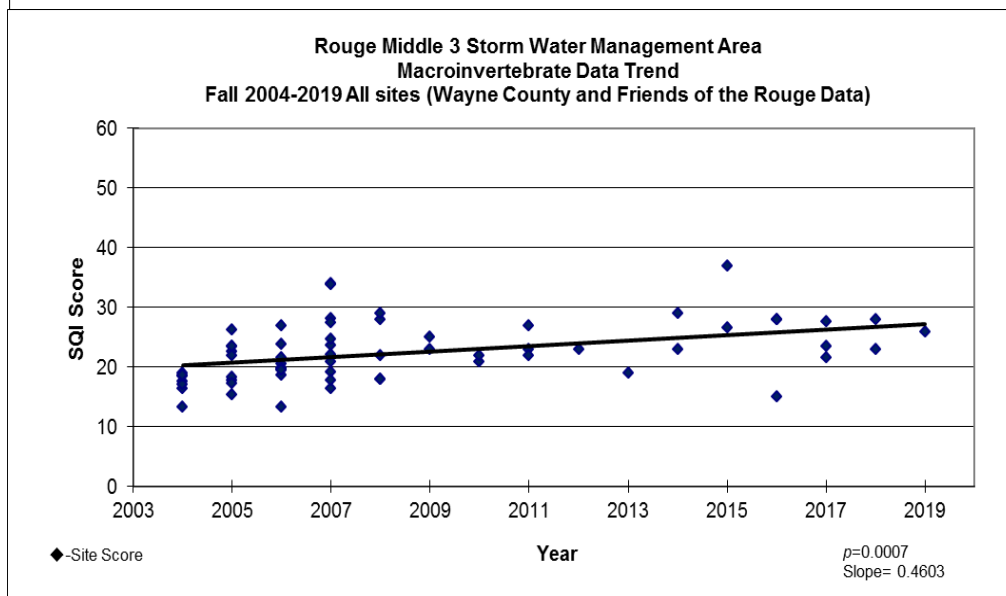
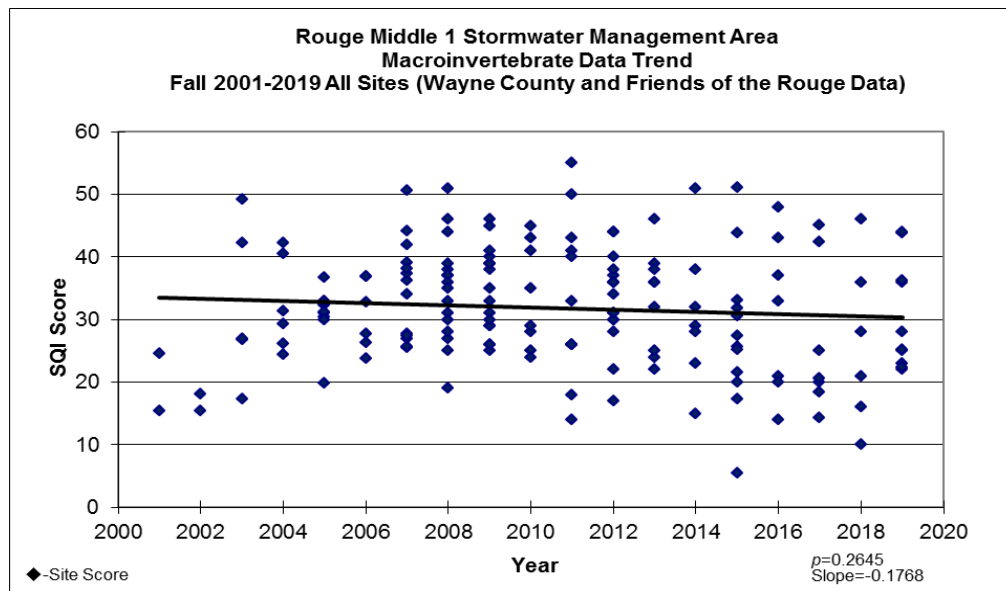
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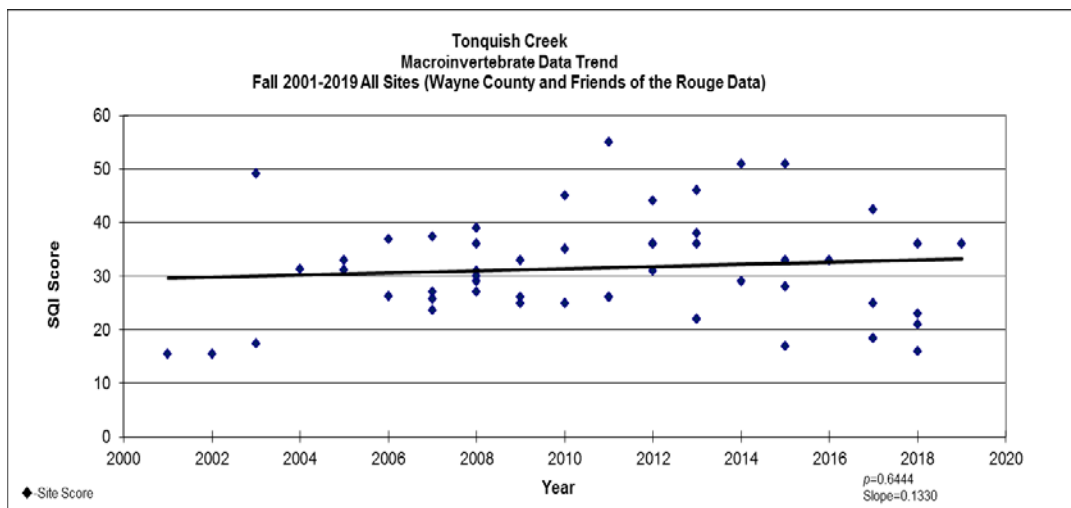
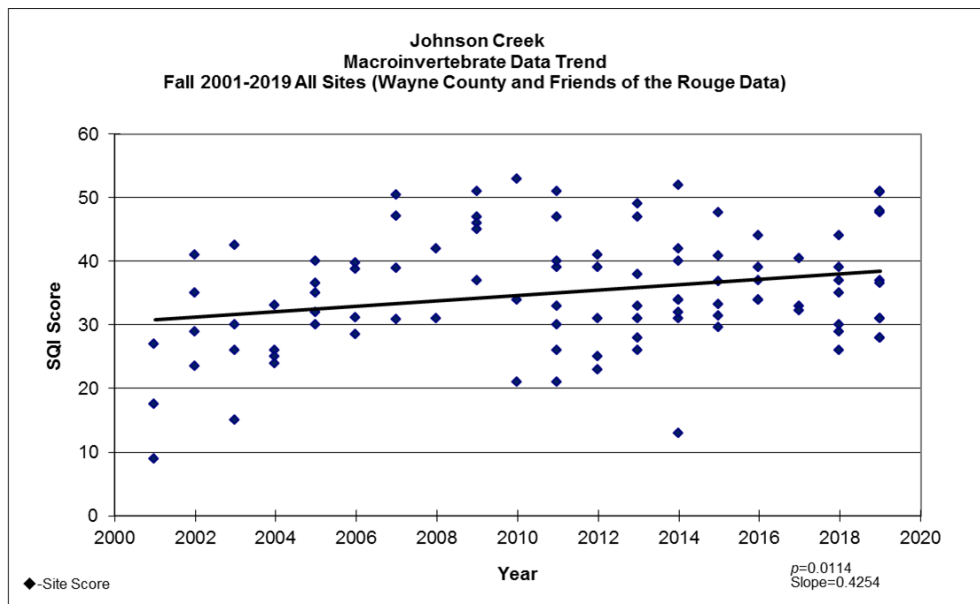
Upper



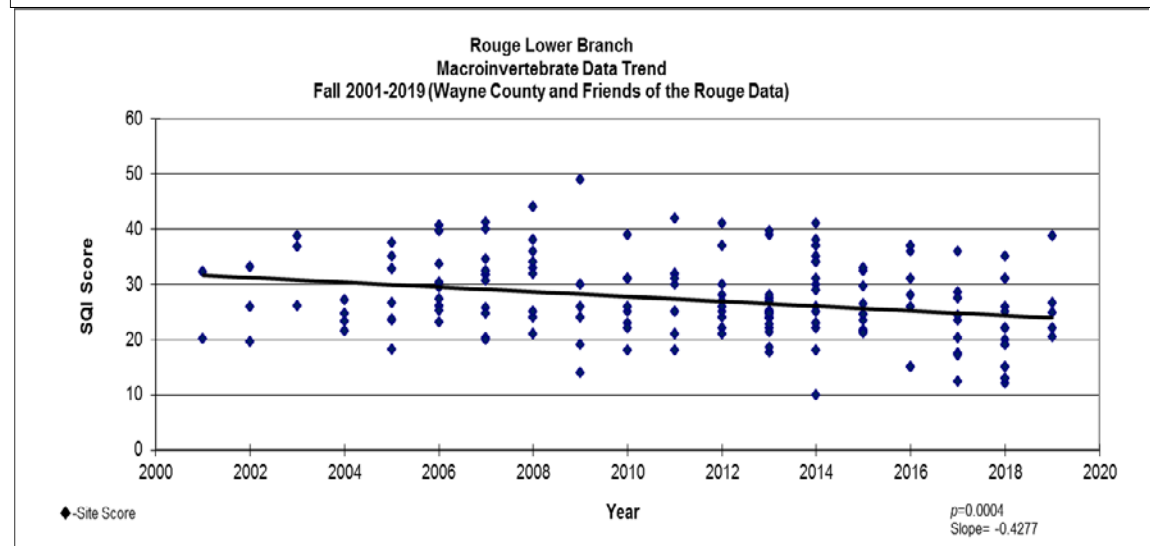
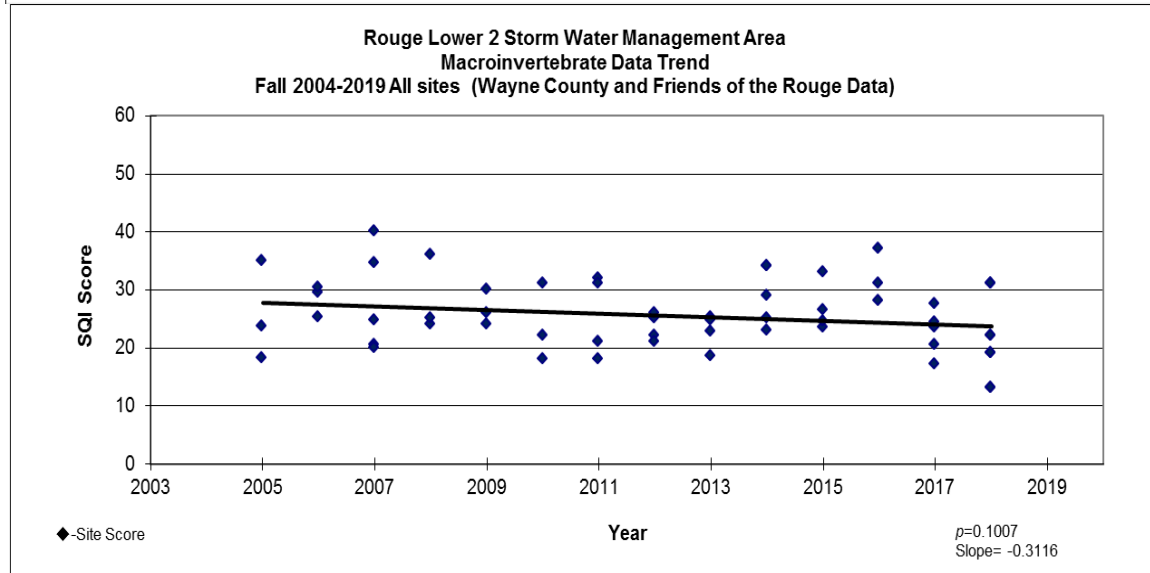
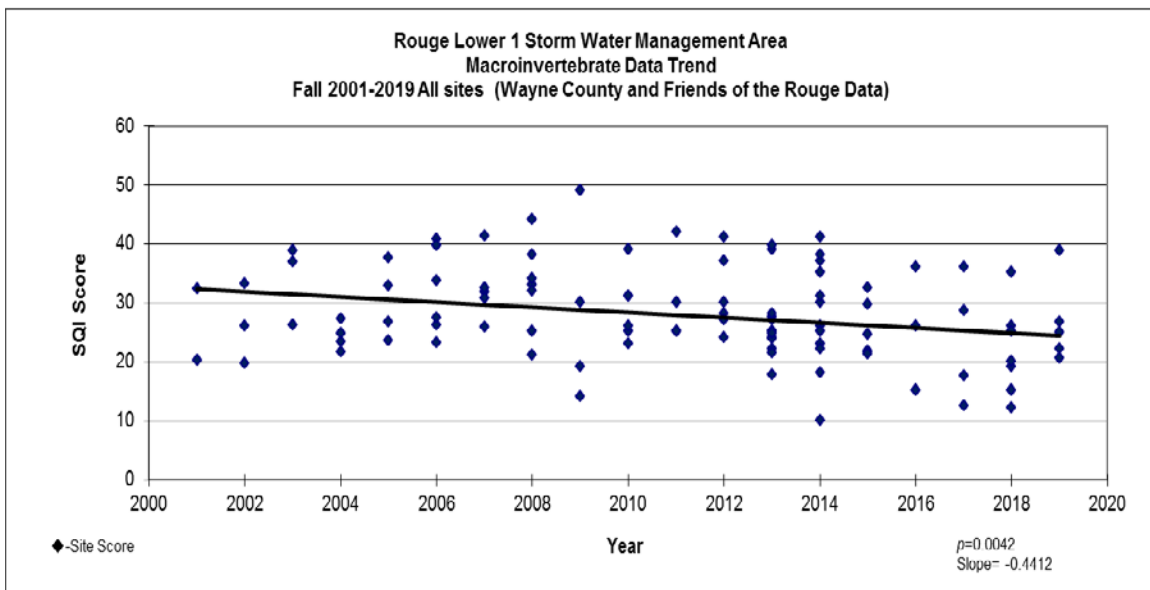
Middle



Middle Tributaries



Lower



2020 Fall Bug Hunt Report



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Rouge River Benthic Macroinvertebrate Monitoring Program Report Fall 2020

Introduction

Benthic macroinvertebrates, known as “bugs,” are indicators of stream health. They disappear when sites are too polluted. The goals of Friends of the Rouge’s (FOTR) monitoring program are to increase the number of sites for which reliable data on benthic populations and river corridor conditions are available and raise public awareness of Rouge issues. Volunteers allow us to gather more data, raise awareness through their involvement, and help reduce monitoring costs. We have been gathering this data since 2001. The Rouge River, located in southeast Michigan, is an impaired body of water with portions that do not meet state water quality standards for dissolved oxygen, aquatic biota, pathogens, and more. The water quality in the Rouge River watershed has shown improvement over the years due to efforts to reduce pollution inputs and restore the river, and the FOTR bug monitoring program is instrumental in evaluating the conditions of the river over time and the impact of restoration efforts.

Sustainable Funding

Long term monitoring requires a stable, long term source of funding to prevent gaps in data. Like all FOTR programs, we rely on grants, sponsorships, and memberships. In 2019, after struggling to replace some of our past sources, we approached the communities in which we sample. If each community provided a small amount, it could help make this program more sustainable. Many communities agreed to sponsor spring and fall sites, enabling us to move forward. The Alliance of Rouge Communities (ARC) sponsored the 2020 Stonefly Search. Later in the year, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) came through with additional funds for the Fall Bug Hunt through a grant that supports the work to restore the river. Additionally, donations from volunteers helped to keep the program afloat, in particular a donation from Bug Hunt Team Leader Lynn DeGrande and her husband Stuart Steel.

Pandemic Constraints

We held the Stonefly Search in January 2020. Then the COVID-19 pandemic hit. Unable to ask volunteers to leave their homes in April due to stay at home orders in place, we had to cancel the Spring Bug Hunt. Most communities agreed to defer their site sponsorship to next year. After developing a protocol on how to safely engage volunteers during



Schoolcraft students look for bugs from Bell Creek

COVID, we successfully and safely held the Fall Bug Hunt in October. Participating volunteers filled out health screenings, wore masks, and practiced social distancing. Rather than holding the usual introductory gathering, Team Leaders picked up the equipment in advance and met their team out in the field. All community sponsored sites were sampled as well as an additional number of sites supported by EGLE.

This report contains benthic macroinvertebrate sampling results from 30 Rouge River tributary and river sites. The Fall Bug Hunt on October 17, 2020 had 58 attendees that sampled 21 sites in 11 teams. Sue Thompson of Wayne County Department of Public Services Environmental Services Division and four Team Leaders sampled an additional six sites, University of Michigan-Dearborn students assisted at one site and Sue Thompson surveyed two more sites.



Volunteers wore masks and kept their distance for the Fall Bug Hunt.

Overall Scores

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

Of the 30 sites sampled this fall, the average Stream Quality Index (**SQI**) was FAIR (27) (map p.5, Table 1 & 5). Sites averaged 11 taxa and 2 EPT. No sites had EXCELLENT **SQI**s. Six sites rated GOOD; 21 sites were FAIR and three sites scored POOR. The number of taxa found at sites ranged from 8-22 and was highest at John1.

Table 1: Averages

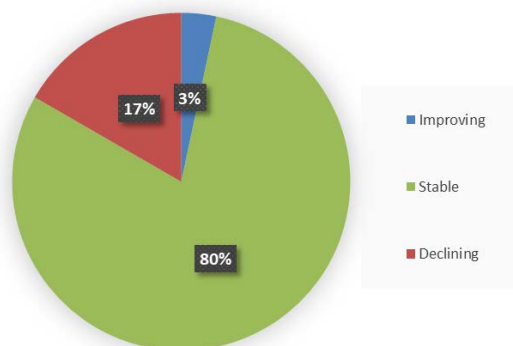
Average SQI	Average # of taxa	Average # EPT	Average # Sensitive Families
27	11	2	0

Some mayfly, stonefly and caddisfly families (**EPT**) were found at all but three sites with an average of two of these families per site. Two sites had the highest number of **EPT** (4) – John1 and MR-22. Two sites had sensitive families: prongbill mayflies (*Leptophlebiidae*) at Fowl1 and MR-22 and slender winter stoneflies (*Capniidae*) at MR-22.

Data Trends

When we looked at data trends by site (Chart 1), 80% of sites are stable, 3% improving and 17% declining. Compared with past years, fewer sites are stable (2019-84%), fewer sites were improving (2019-13%) and more sites were declining (2019-3%).

Chart 1: Site Trends



To compare change over time, we analyzed the trends by subwatershed, with Johnson Creek analyzed separately as it is a coldwater tributary (Table 2 and p. 9-15). Johnson Creek had a significant positive trend and Middle 1 had no significant trend. The Lower 1, Main1-2 and Upper subwatersheds all had significant negative trends.

Table 2: Fall Bug Hunt trend summary All Sites 2001-2020					
Subwatershed	slope	p -value	True trend	Subwatershed average score	Water Quality Rating
Lower 1	-0.4242	0.0042	yes, negative	28	Fair
Main 1-2	-0.4174	0.0024	yes, negative	29	Fair
Johnson Creek	0.3455	0.0233	yes, positive	35	Good
Middle 1	-0.1928	0.1857	No trend	32	Fair
Upper	-0.3821	0.0003	yes, negative	24	Fair

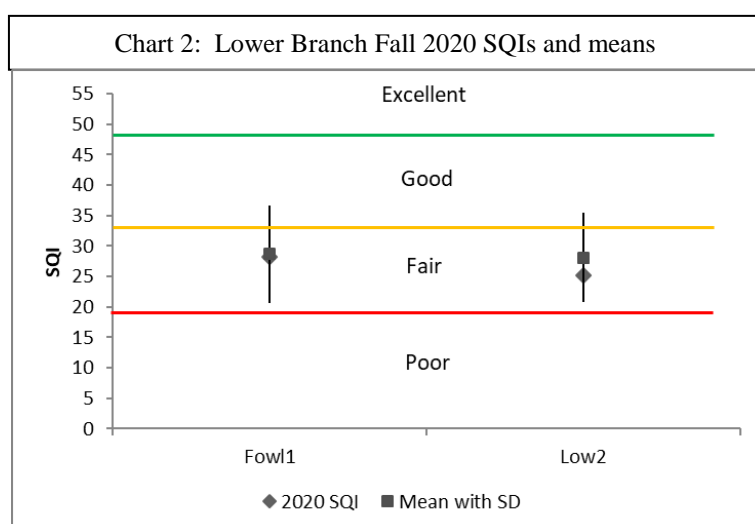
The data was further analyzed for trends by combining the data for the branches with subareas (Lower 1 combined with Lower 2, Main 1/2 combined with Main 3/4, and Middle 1 and Middle 3 combined, respectively) and looking at two creeks separately (Bell and Tonquish) in addition to Johnson Creek. Table 3 contains a summary of this analysis; the graphs are on p. 9-15. The Lower, Main and Upper had significant declining trends while the Johnson Creek combined with the Middle Rouge were improving (though Middle 1 and Middle 3 combined had no significant trend). No trends were seen for Bell or Tonquish Creeks.

Table 3: Fall Bug Hunt trend summary combined branches 2001-2020					
Branch	slope	p -value	True trend	Branch average	Water Quality Rating
Lower 1 and Lower 2 combined	-0.4134	0.0005	yes, negative	27	Fair
Main combined (Main 1/2 and Main 3/4)	-0.4305	0.0008	yes, negative	29	Fair
Middle 1 and 3 combined	0.1271	0.3371	no trend	29	Fair
Tonquish Creek only	0.1818	0.4958	no trend	31	Fair
Johnson Creek and Middle Rouge	0.2794	0.0052	yes, positive	31	Fair
Bell Creek only	0.1723	0.3254	no trend	23	Fair
Upper only	-0.4260	0.0340	yes, negative	27	Fair

Individual sites were examined for long term trends (Table 4). Of the sites sampled in fall 2020, six had significant trends. John2 is improving while the five other sites are declining.

Table 4: Fall Bug Hunt Trend Summary 2001-2020 by site					
Site	slope	p-value	Statistically significant trend	Site average score	Water Quality Rating
Low2	-0.7824	0.0385	yes, negative	28	Fair
Main6	-0.4548	0.0288	yes, negative	33	Fair
John2	0.8760	0.0299	yes, positive	38	Good
Ing1	0.0374	0.0374	yes, negative	28	Fair
Bell2	-0.8622	0.0090	yes, negative	24	Fair
Min1	-0.7472	0.0612	yes, negative	26	Fair

Lower Branch



Two sites were sampled on the Lower Branch and both sites scored and averaged FAIR (27). In comparing averages and past data (Chart 2), both sites were within a standard deviation of the average for the site.

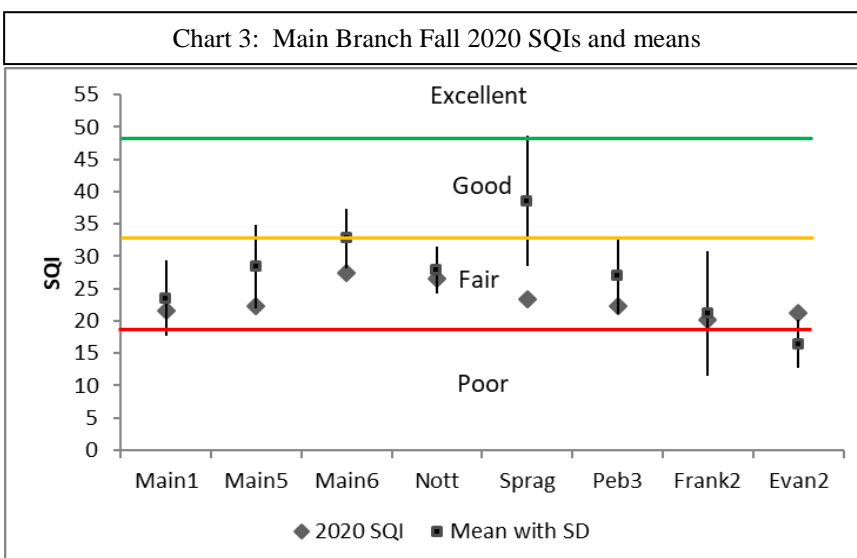
Long term trend analysis showed a significant negative trend for the Lower 1 alone and when combined with the Lower 2 (Table 2-3 above, graphs p. 9-10).

The Low2 site had a significant negative trend (Table 4) for the second year in a row. As the land changes from farmland to subdivision and impervious surfaces are increased, it is not surprising that fewer bugs are able to survive.

Main Branch

Eight sites on the Main Branch were sampled, including five tributaries: Evans, Franklin, Nottingham, Pebble and Sprague Creeks. SQIs averaged FAIR (23). All eight sites were FAIR.

In comparing averages and past data (Chart 3), one site were above a standard deviation of the mean (Evan2) and two were



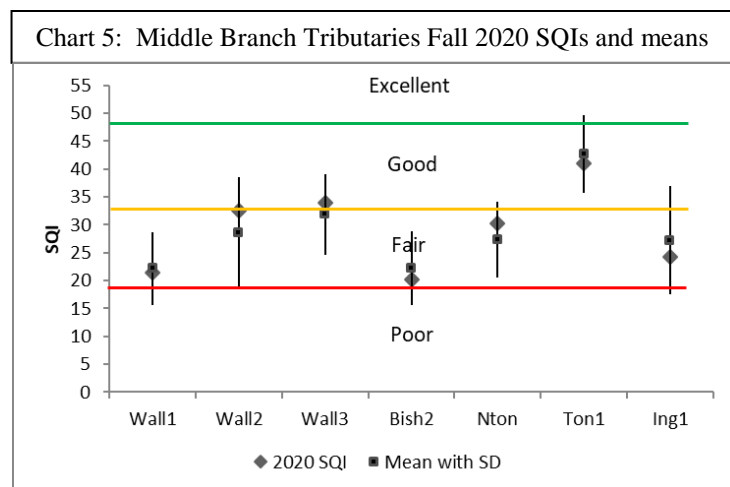
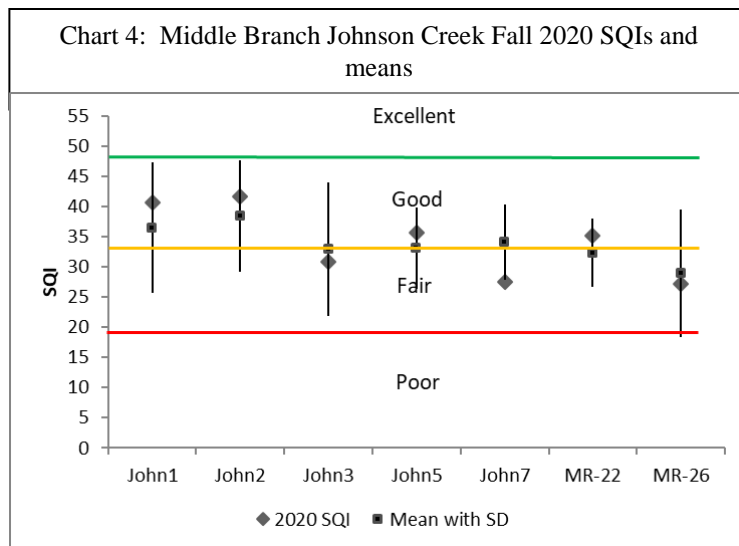
below (Main6 and Sprag). The rest were within a standard deviation of the mean. Long term trend analysis shows a significant negative trend for the Main 1-2 alone and when combined with the Main 3/4 (Table 2-3 above, graphs p. 10-11).

One site had a significant trend – Main6 declined (Table 4).

Middle Branch

Fourteen sites were sampled on the Middle Branch including Bishop, Ingersoll, Johnson, and Tonquish Creeks and the Walled Lake drainage. SQI scores averaged a high FAIR (32). Eight sites scored GOOD, and six were FAIR.

In comparing averages and past data for the seven Johnson Creek sites (Chart 4), the Rouge's cold water tributary, one Johnson Creek site was below a standard deviation of the mean (John7) and all the rest were within a standard deviation of the mean. All other Middle Branch tributaries were within a standard deviation of the mean.



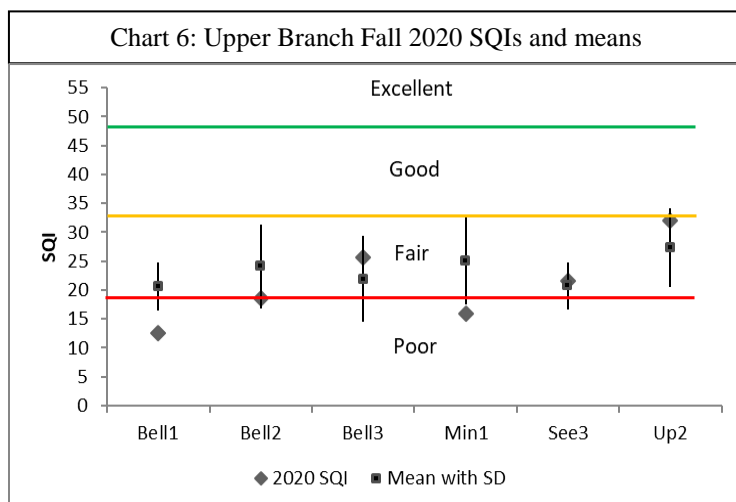
In long term trend analysis, the Johnson Creek had a positive trend (Table 2 above, graphs p. 12-14) while the Middle 1 had no significant trend. When the Middle 1 and Middle 3 subwatersheds were combined, there was no significant trend (Table 3 above, graphs p. 12-14).

When Johnson Creek was combined with the Middle branch, there was a significant positive trend.

John2 had a positive trend for the second year in a row while Ing1 had a negative trend (Table 4).



Upper Branch



Six Upper branch sites were sampled including three Bell Creek sites, one on Minnow Pond, one on Seeley Creek and one on the main branch of the Upper. SQIs averaged a low FAIR (21). Three sites (half) were FAIR and three POOR.

In comparing averages and past data (Chart 6), two sites were below a standard deviation of the mean (Bell1 and Min1). Long term trend analysis shows a significant decline in scores since 2001 (Table 2 & 3, graphs p.15).

Bell2 and Min1 had significant negative trend by site (Table 4).

THANK YOU!!!!

Thank you to all the **volunteers** and **Team Leaders**, **Sue Thompson** and **Wayne County** Department of Public Services Environmental Services Division for sampling additional sites, helping with identification, trend analysis and reviewing the report, biologist **Bruce McCulloch** for SQI comparison graphs and reviewing the report, and the the Village of **Beverly Hills**, Cities of **Farmington, Livonia, Novi, Plymouth, Southfield and Troy**, the Townships of **Northville and Plymouth**, **Washtenaw County Water Resources Department**, the **Michigan Department of Environment, Great Lakes and Energy**, the **the Erb Family Foundation** and individual donations from **Lynn DeGrande** and **Stuart Steel** for funding the program.

Join us for the Winter Stonefly Search

Sat. Jan. 23, 2021 9 am – 3 pm

Register by by Jan. 9, 2021 and you will be assigned your sites

Stonefly Refresher Mon. Jan. 11, 2021 7-9 pm online

Register for one or both: <https://therouge.org/bug-hunt-events-and-trainings/>

2020 Fall Bug Hunt SQIs

Fall 2020 Scores

- GOOD
- FAIR
- + POOR

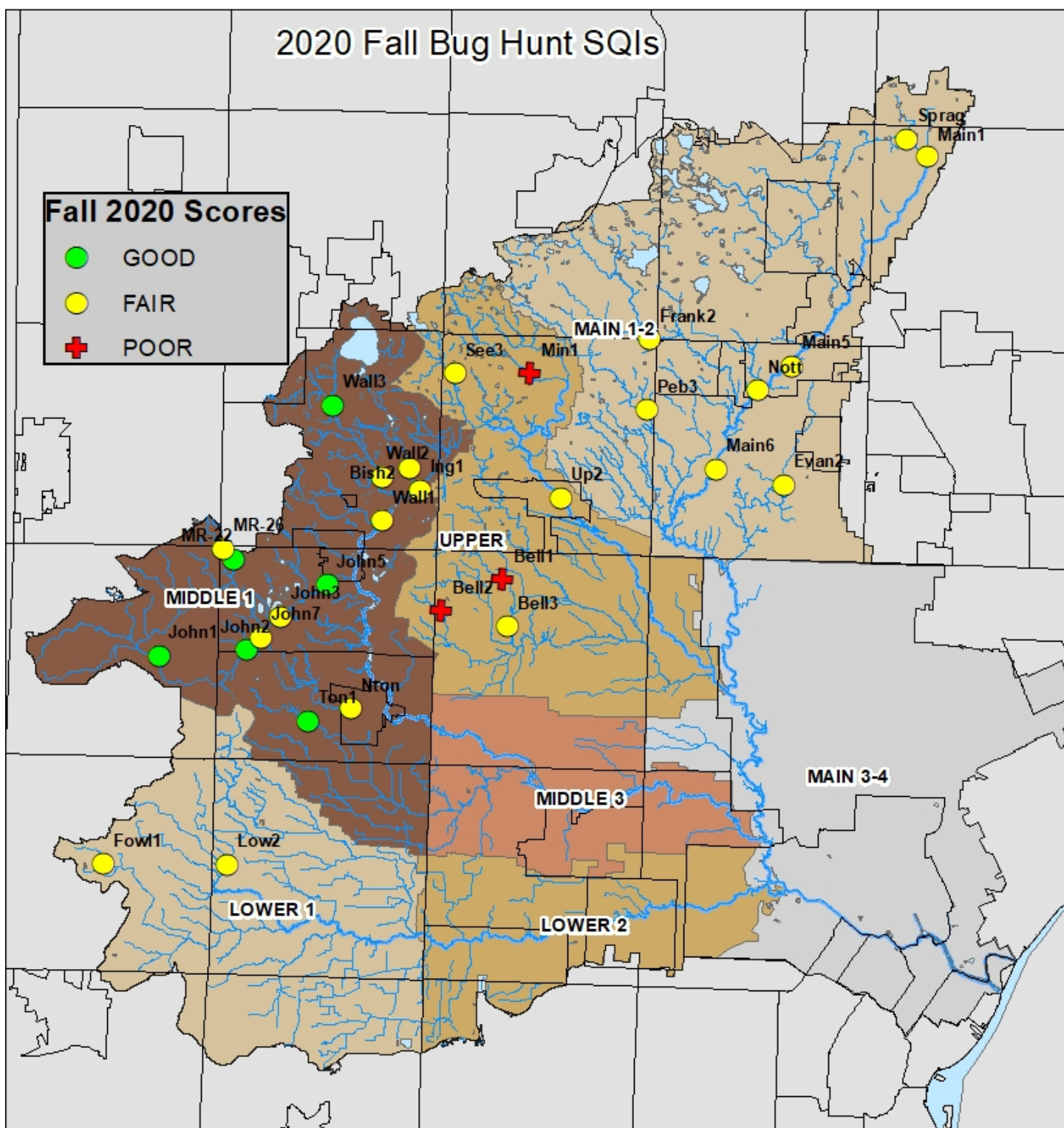
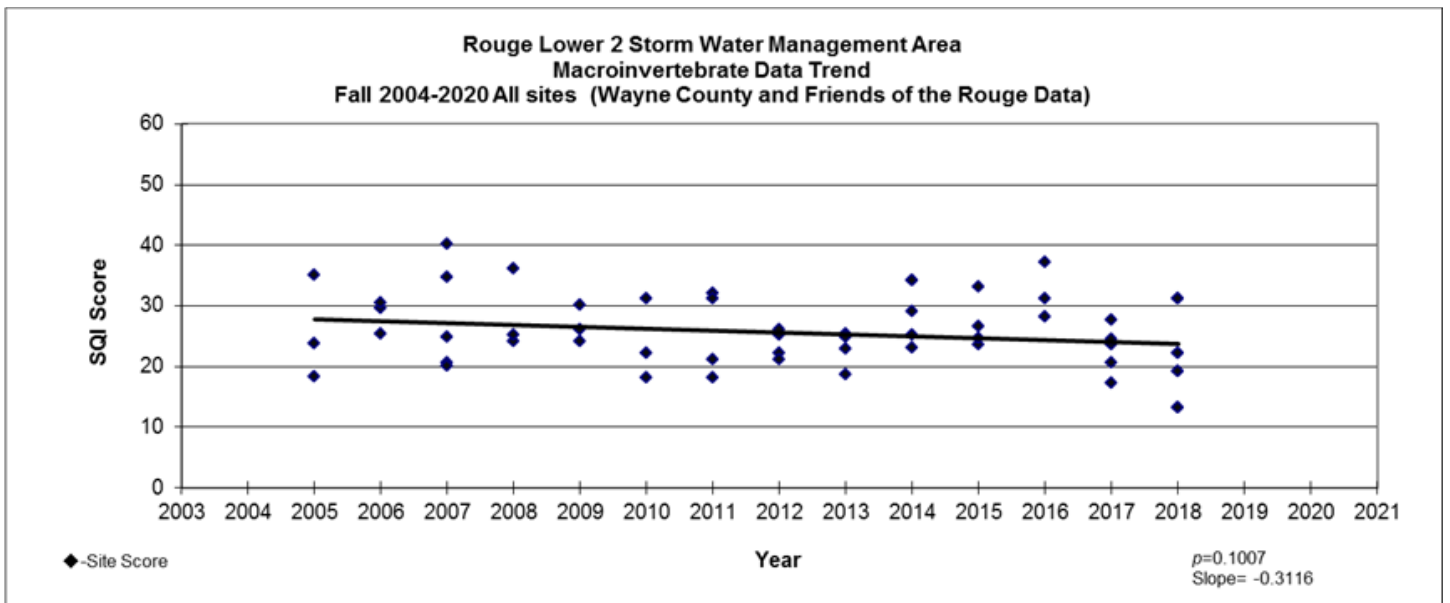
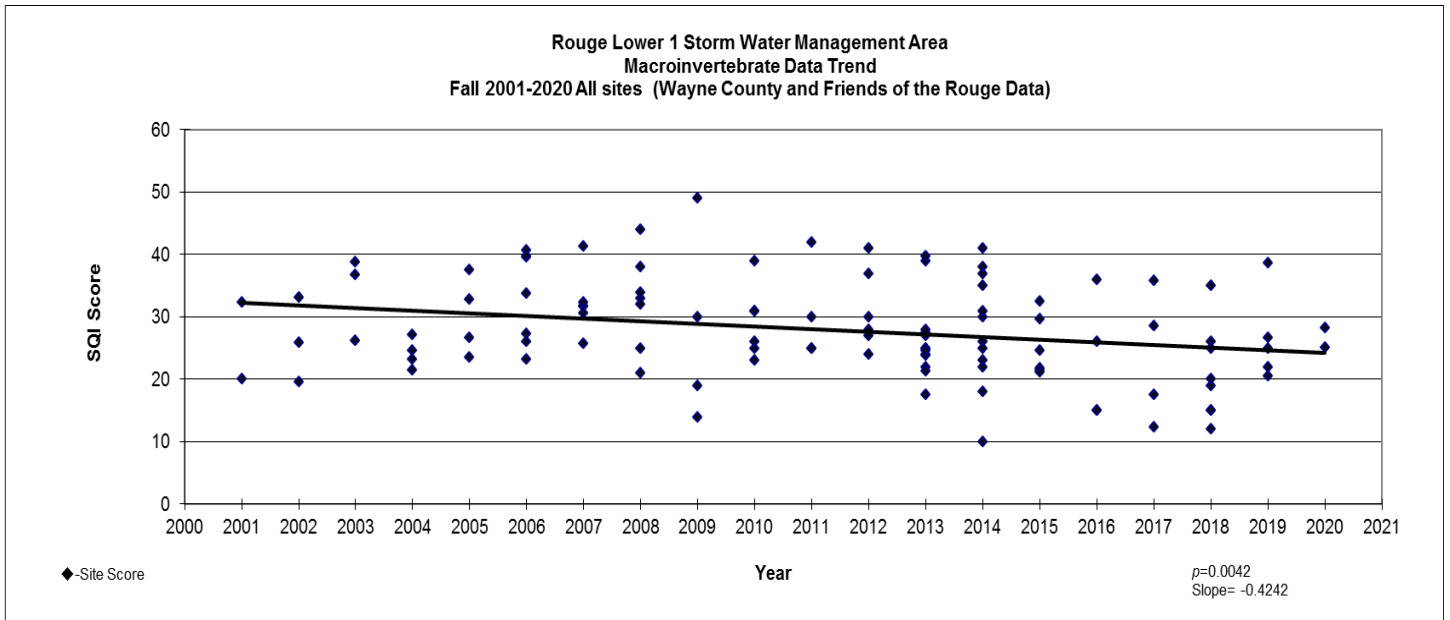


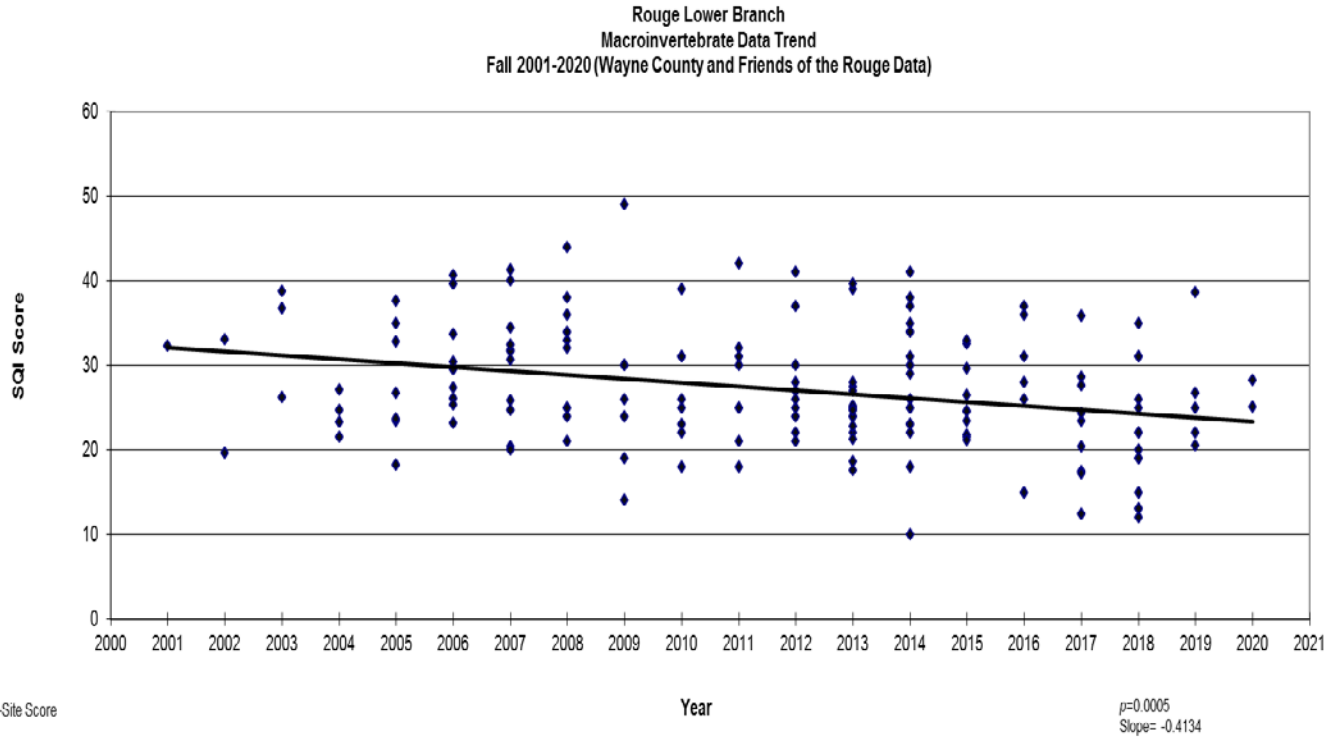
Table 5: Fall 2020 Data									
Branch	Stream Name	FIELDID	Site Description	sponsor	SQI	Score	Taxa	EPT	Sens
Lower	Fowler Creek	Fowl1	Prospect	Washtenaw County	28	FAIR	10	2	1
Lower	Lower Rouge	Low2	Cherry Hill	EGLE	25	FAIR	9	1	0
Main	Evans Creek	Evan2	LTU	Southfield	21	FAIR	10	1	0
Main	Franklin Creek	Frank2	Ink Pump Sta	EGLE	20	FAIR	8	1	0
Main	Nottingham Creek	Nott	Country Day	Beverly Hills	27	FAIR	8	2	0
Main	Pebble Creek	Peb3	Pebble d/s Dam	EGLE	22	FAIR	8	1	0
Main	Sprague Creek	Sprag	Main Lloyd Stage	Troy	23	FAIR	10	1	0
Main	Main Rouge	Main1	FF Pk	Troy	22	FAIR	10	1	0
Main	Main Rouge	Main5	Douglas Evans	Beverly Hills	22	FAIR	8	1	0
Main	Main Rouge	Main6	Sfld Civic Ctr	Southfield	28	FAIR	15	3	0
Middle	Bishop Creek	Bish2	Bishop Scarborough	Novi	20	FAIR	8	1	0
Middle	Ingersoll Creek	Ing1	Brookfarm Park	Novi	24	FAIR	12	0	0
Middle	Johnson Creek	John1	5M Salem	Washtenaw County	41	GOOD	22	4	0
Middle	Johnson Creek	John2	5M NV	Northville Township	42	GOOD	21	3	0
Middle	Johnson Creek	John3	6M NV	Northville Township	31	FAIR	12	2	0
Middle	Johnson Creek	John5	Fish Hatchery Pk	Northville Township	36	GOOD	13	2	0
Middle	Johnson Creek	John7	Arcadia	Northville Township	28	FAIR	13	2	0
Middle	Johnson Creek	MR-22	Maybury south	EGLE	35	GOOD	12	4	2
Middle	Johnson Creek	MR-26	Napier Rd	EGLE	32	FAIR	16	1	0
Middle	Tonquish Creek	Nton	S Evergreen St	Plymouth	30	FAIR	9	2	0
Middle	Tonquish Creek	Ton1	Plym Twp Pk	Plymouth Township	41	GOOD	12	2	0
Middle	Walled Lk Drainage	Wall1	Rotary Pk	Novi	22	FAIR	12	1	0
Middle	Walled Lk Drainage	Wall2	WL 10 M	Novi	33	FAIR	13	2	0
Middle	Walled Lk Drainage	Wall3	WL 12 M	Novi	34	GOOD	15	2	0
Upper	Bell Branch	Bell1	Bicentennial Park	Livonia	13	POOR	8	0	0
Upper	Bell Branch	Bell2	Schoolcraft College	Livonia	19	POOR	8	0	0
Upper	Bell Branch	Bell3	Livonia 6 Mile	Livonia	26	FAIR	10	2	0
Upper	Minnow Pond	Min1	Minnow 13 M	EGLE	16	POOR	9	1	0
Upper	Seeley Creek	See3	Kennedy Ct	EGLE	22	FAIR	10	1	0
Upper	Upper Rouge	Up2	Shiawasee Park	Farmington	32	FAIR	13	3	0

Data Trend Tables

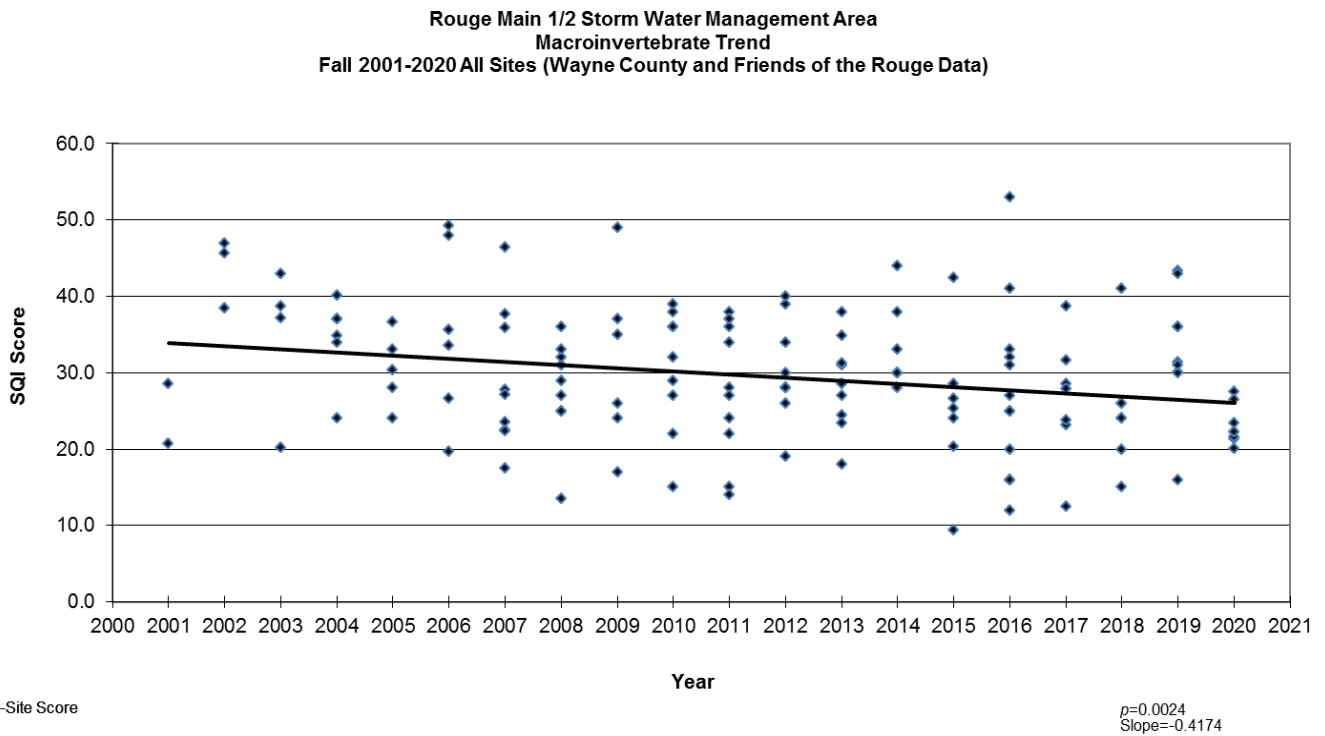
Lower



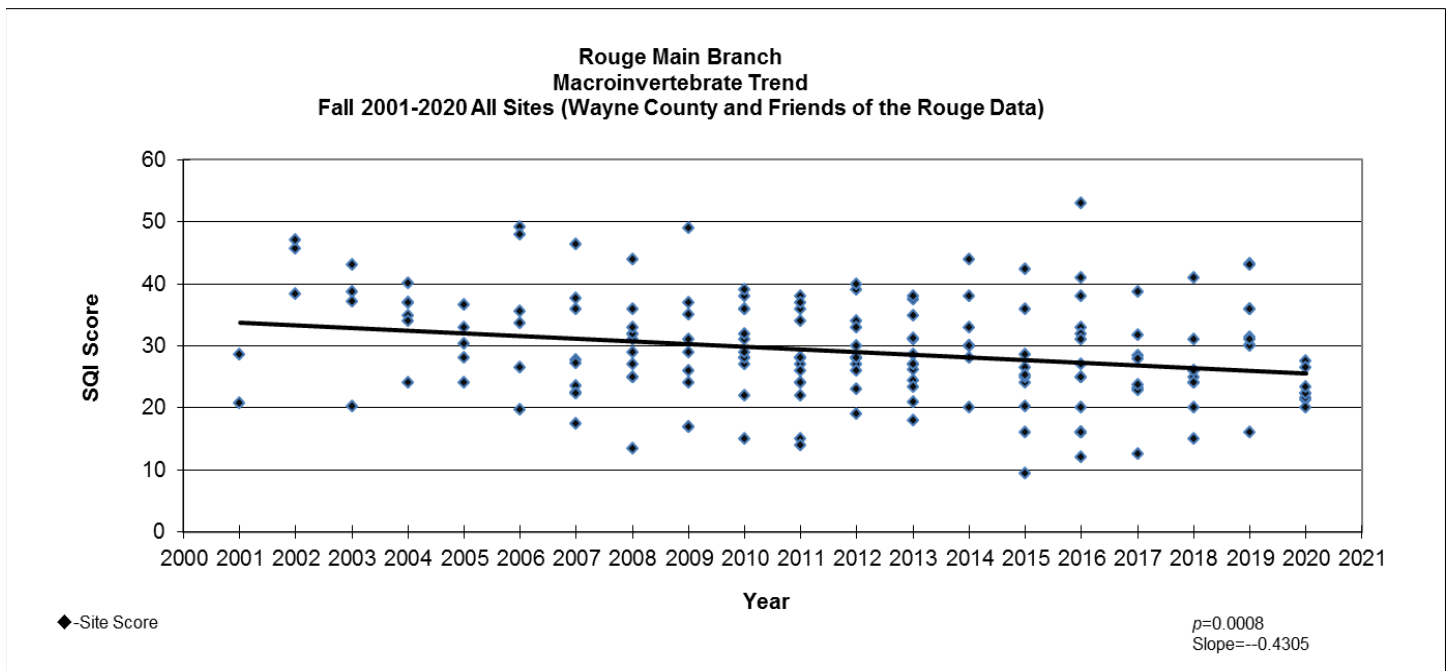
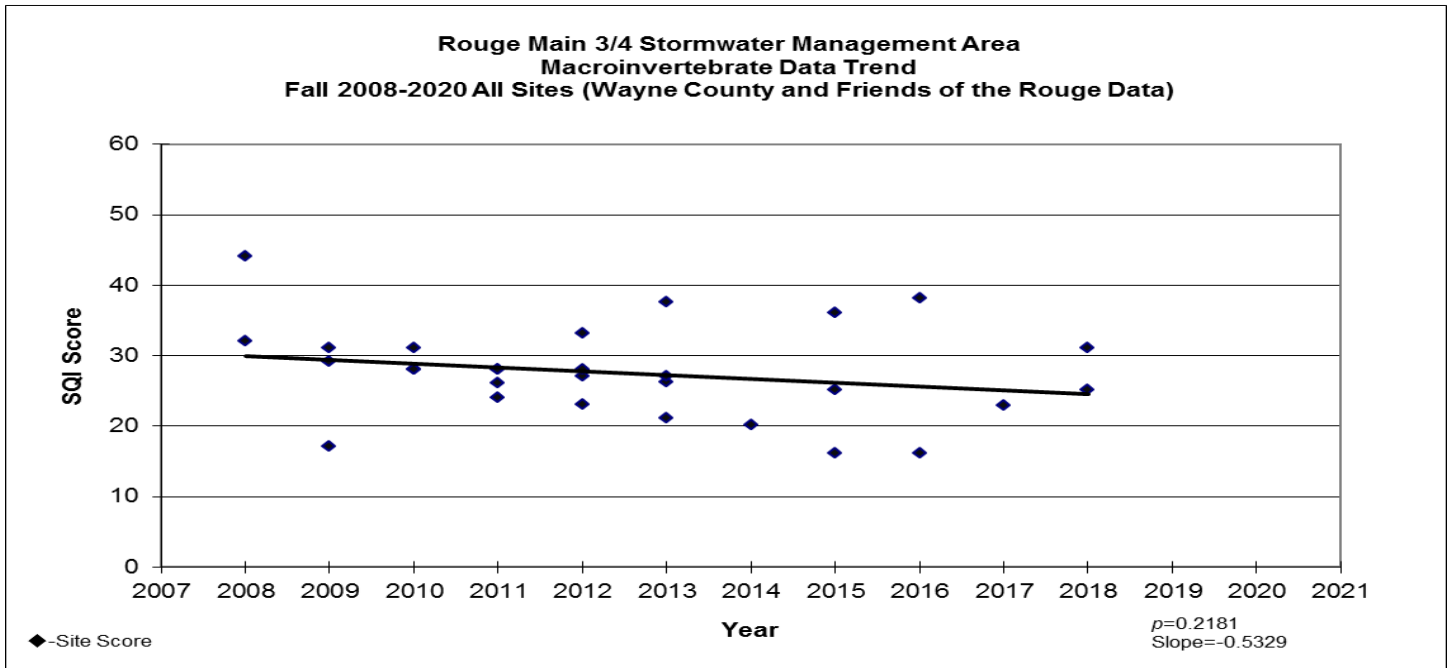
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Main

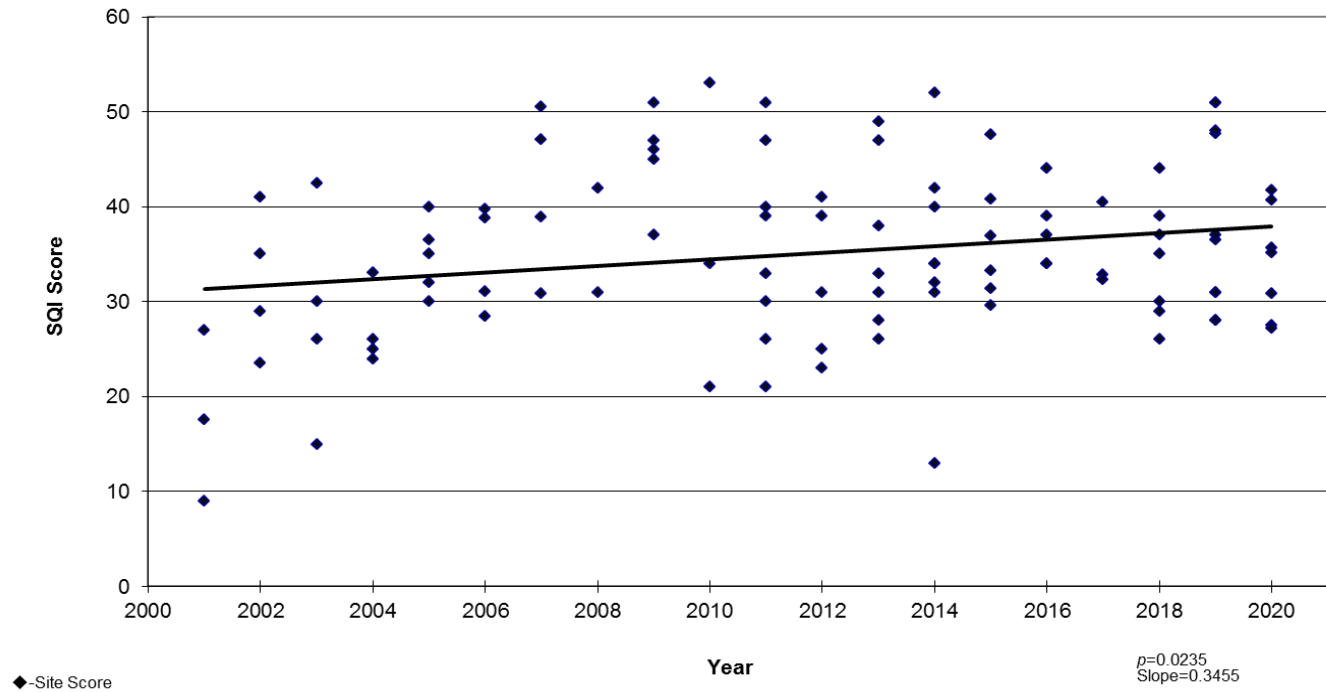


Main (cont.)

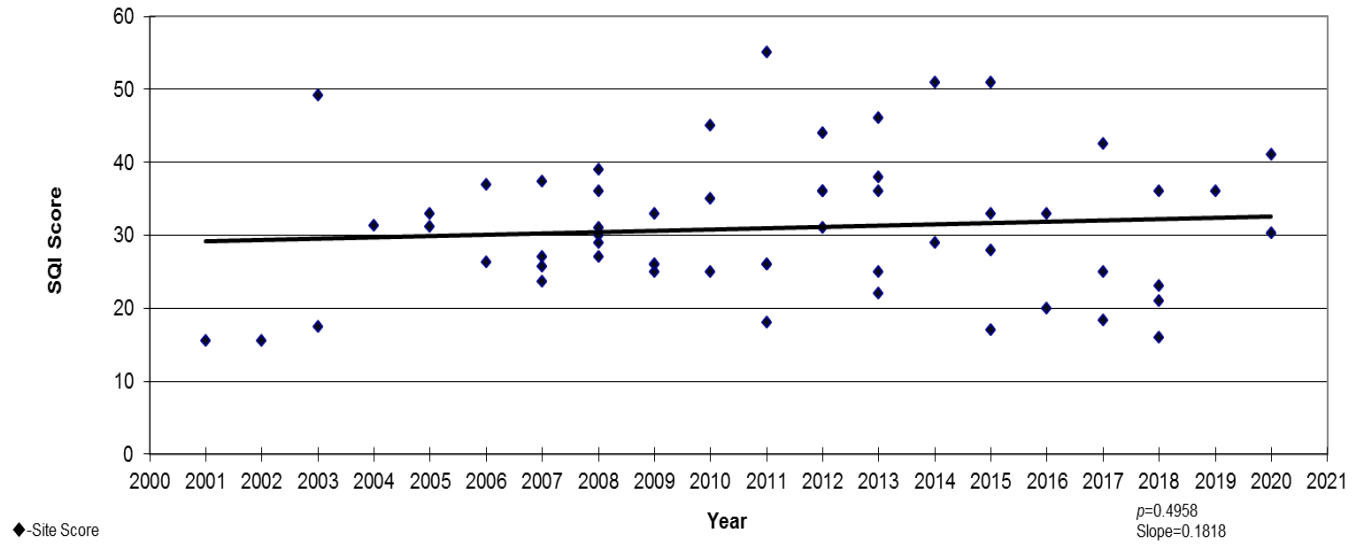


Middle Tributaries

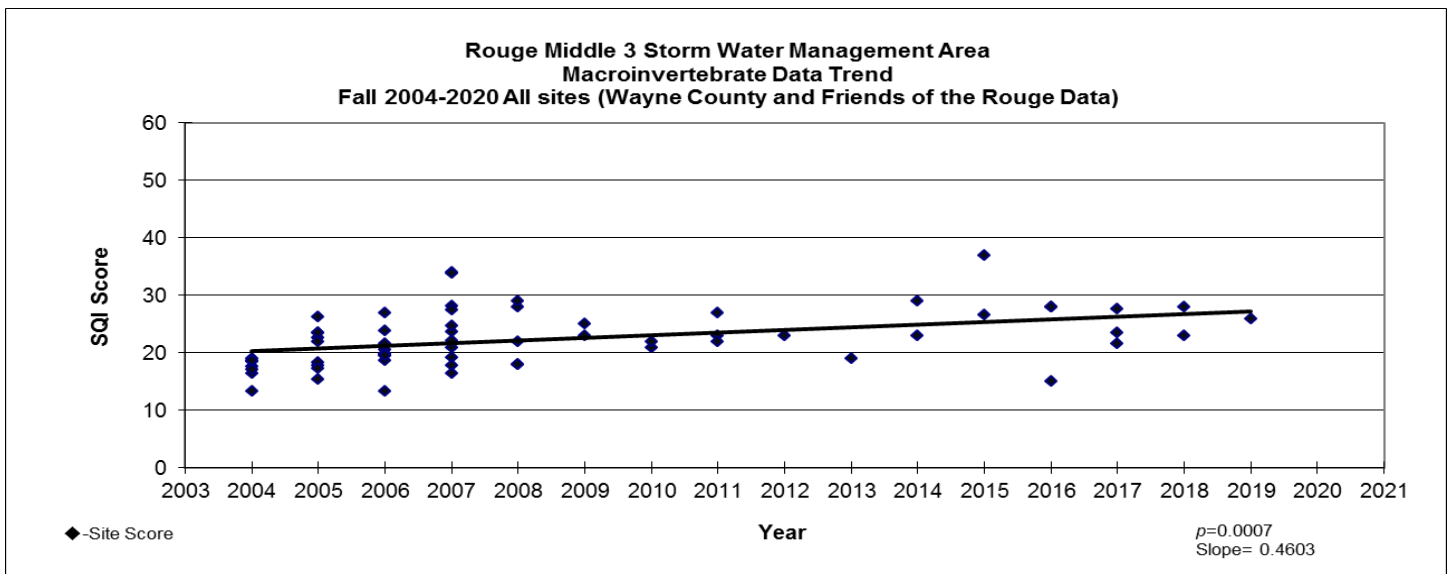
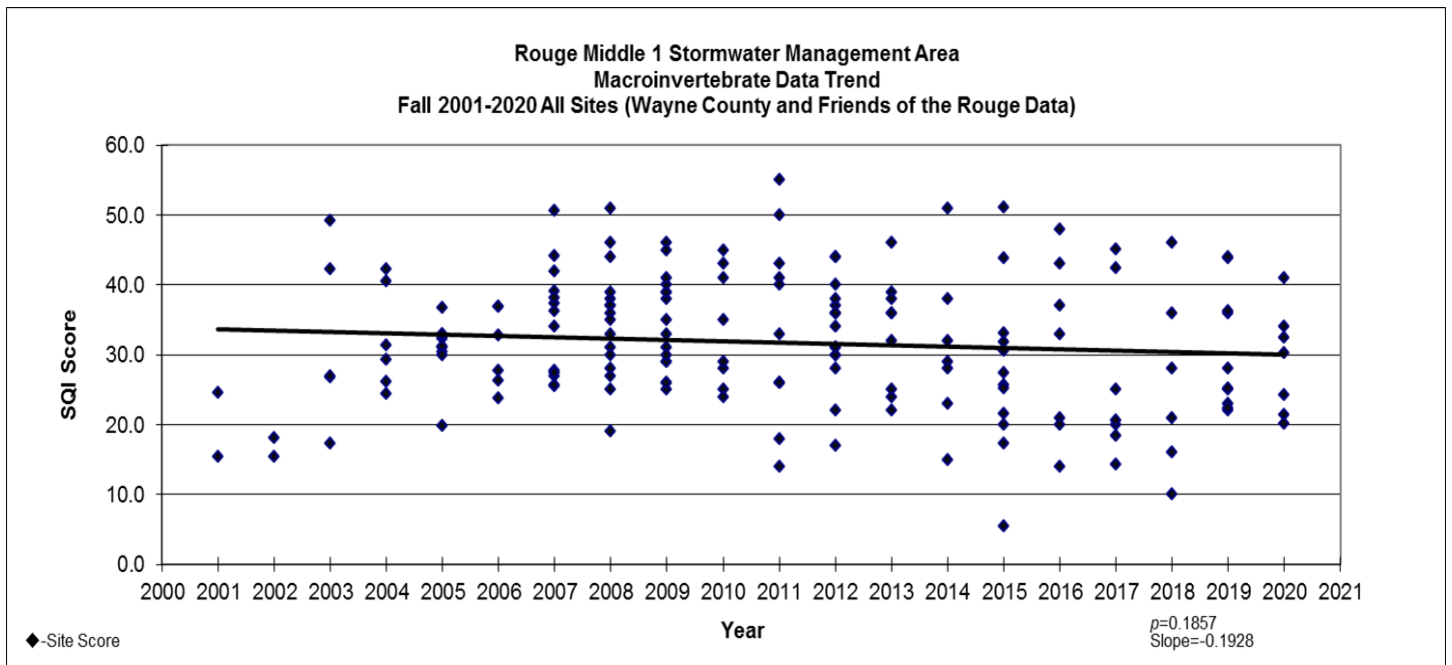
Johnson Creek
Macroinvertebrate Data Trend
Fall 2001-2020 All Sites (Wayne County and Friends of the Rouge Data)



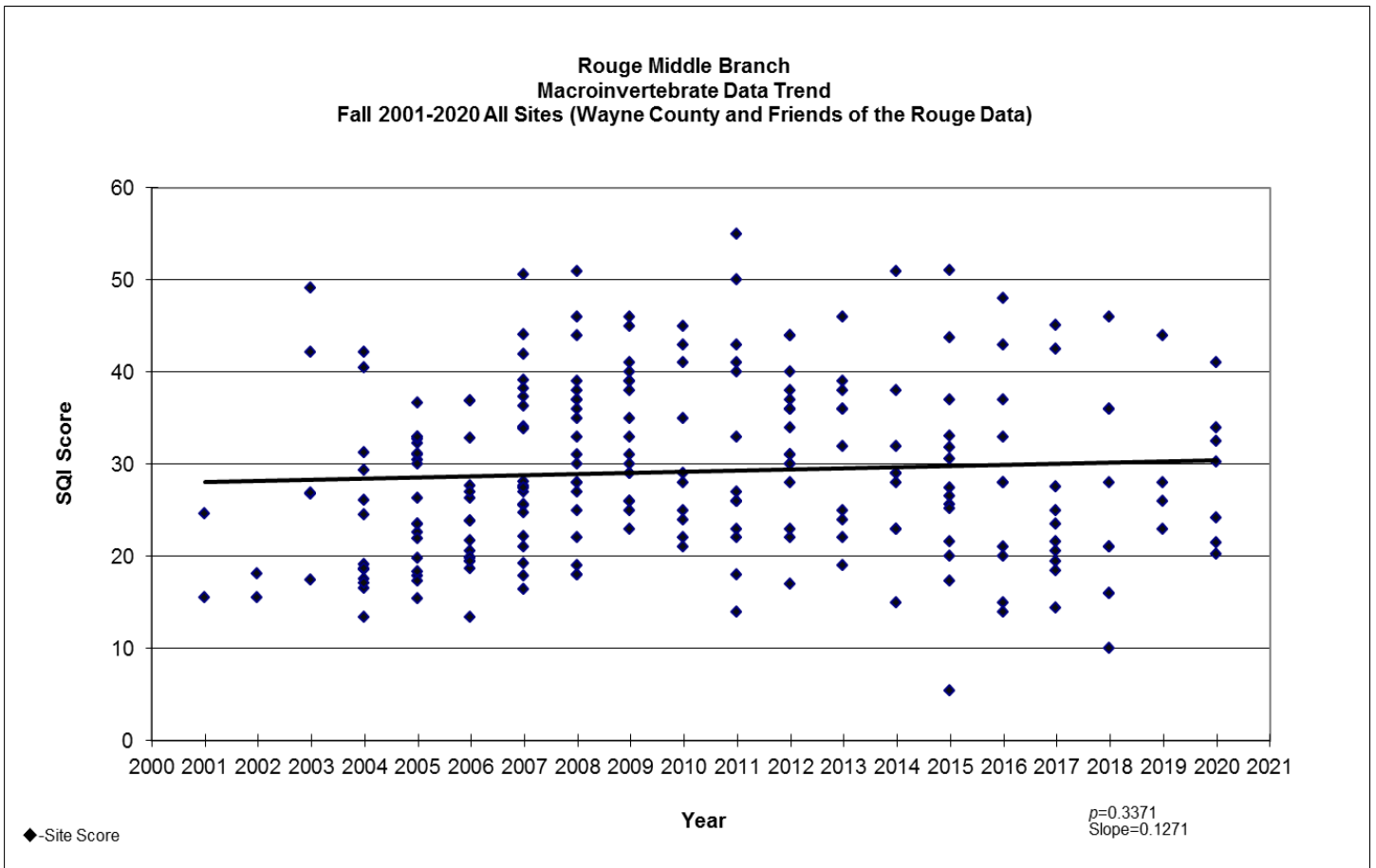
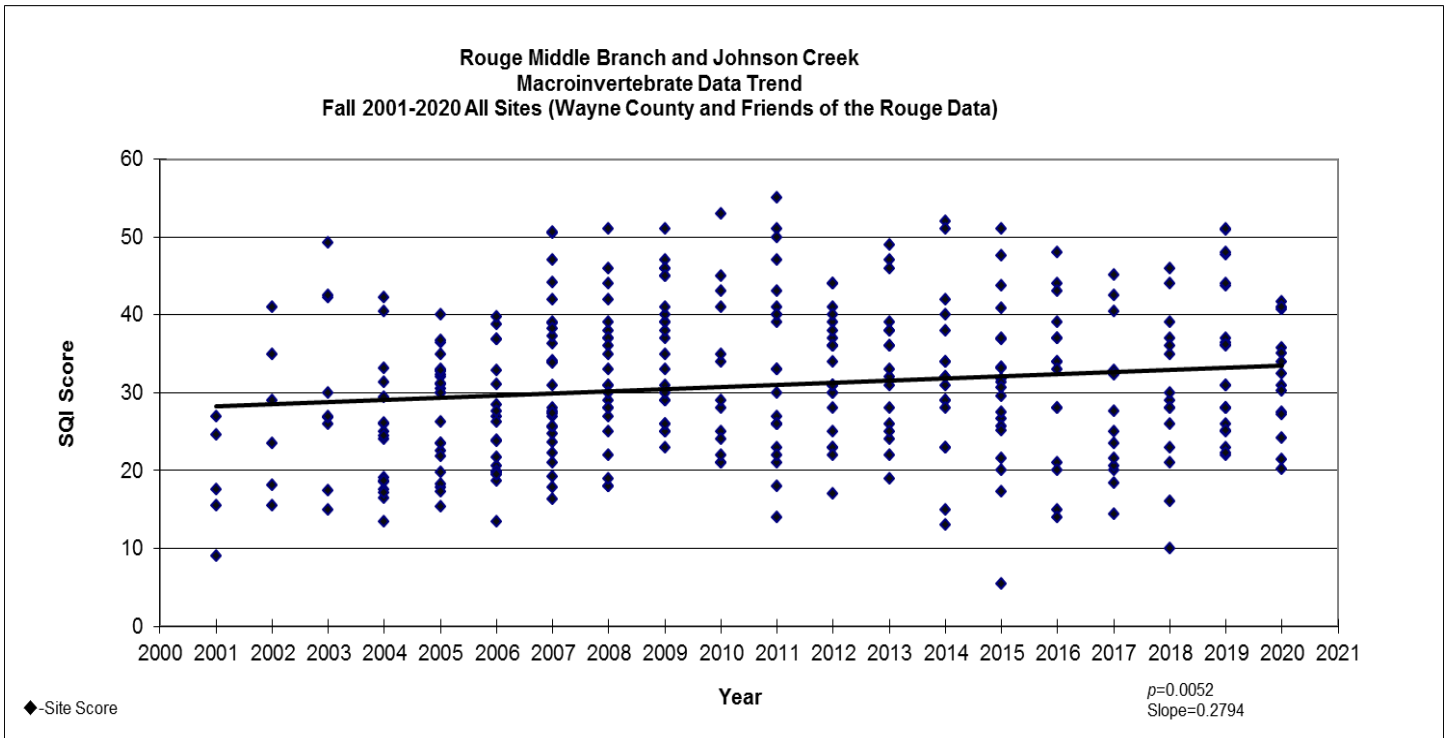
Tonquish Creek
Macroinvertebrate Data Trend
Fall 2001-2020 All Sites (Wayne County and Friends of the Rouge Data)



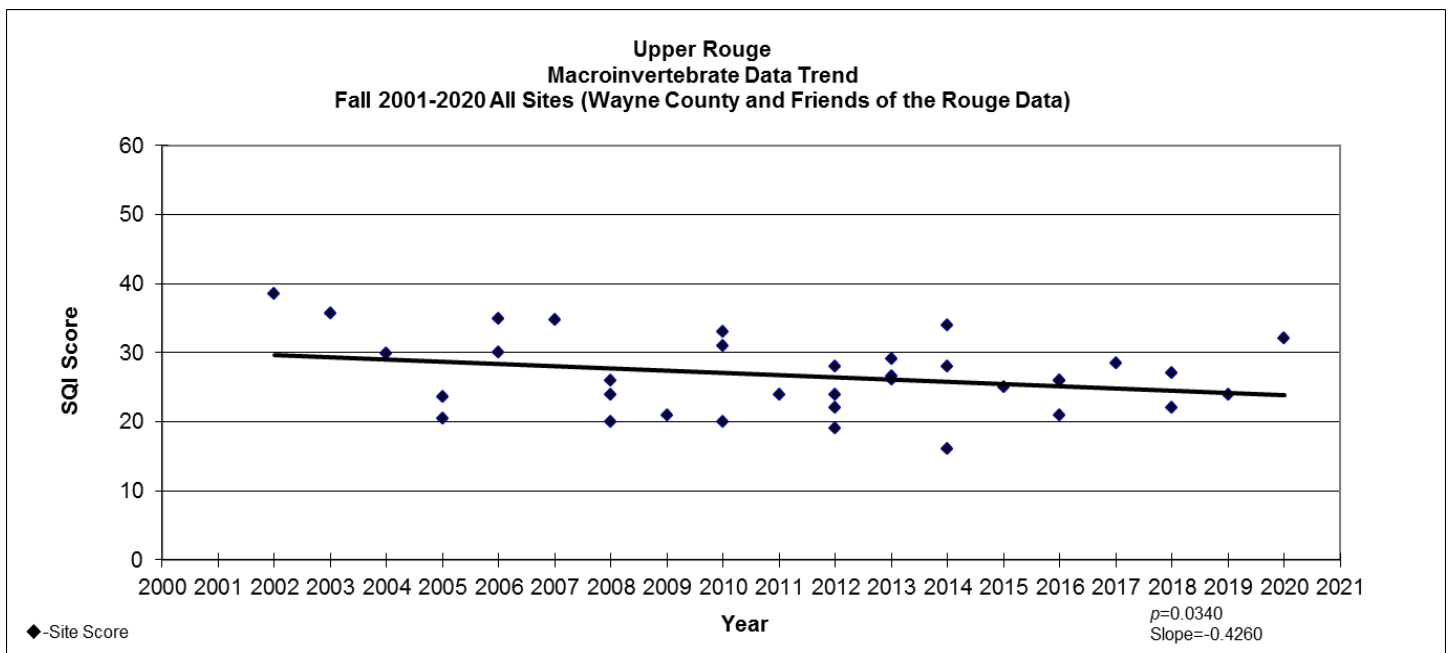
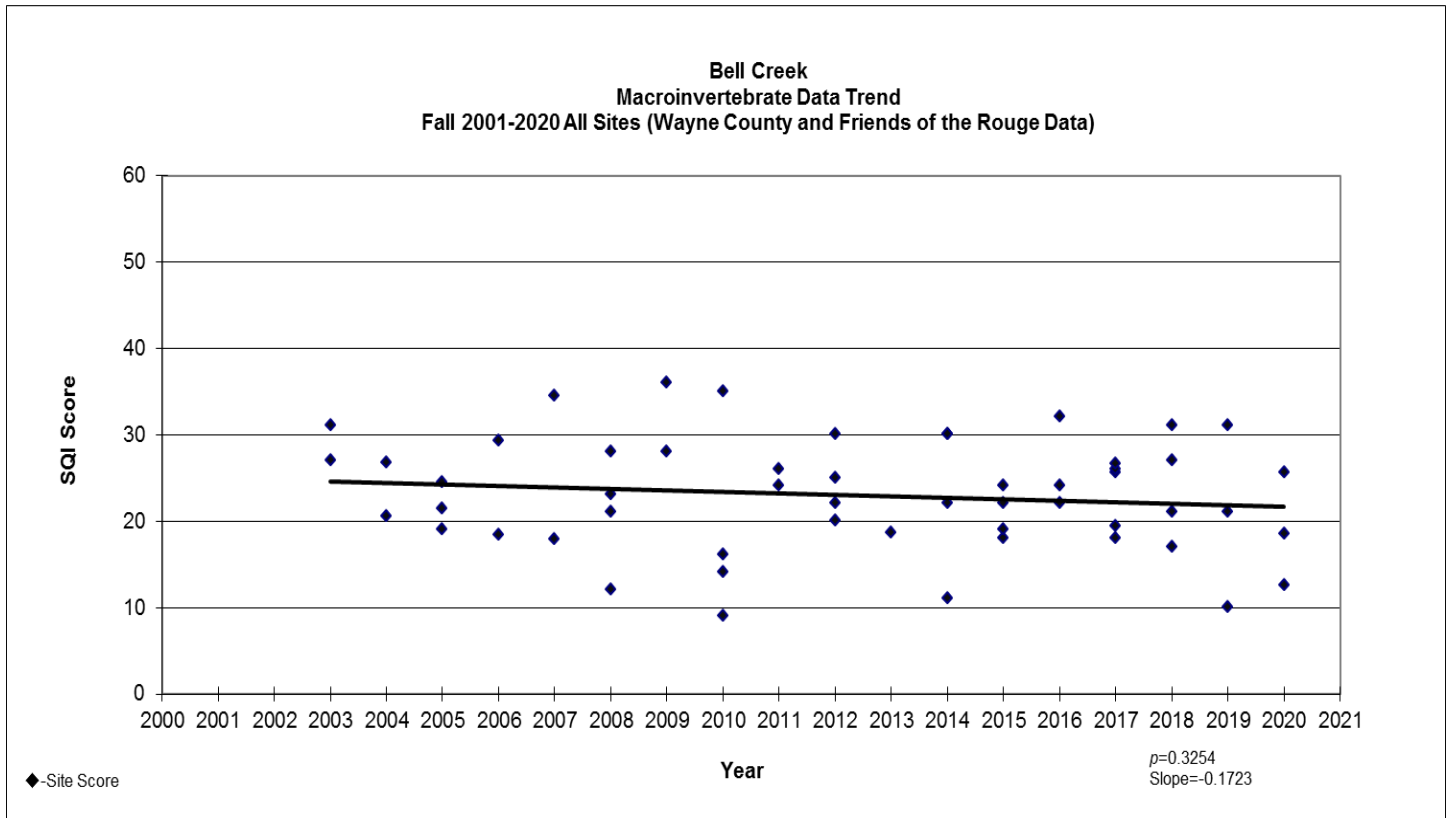
Middle Branches



Middle Branches (cont)



Upper



2021 Fall Bug Hunt Report



www.therouge.org
650 Church Street, Suite 209
Plymouth, MI 48170

Rouge River Benthic Macroinvertebrate Monitoring Program Fall 2021 Report

This report contains benthic macroinvertebrate sampling results from 36 Rouge tributary and river sites. The Fall Bug Hunt on October 16, 2021 had 43 attendees that sampled 21 sites in 11 teams. A number of students in Wayne State University's Transformative Research in Urban Sustainability Training program participated. Additional sites were sampled by volunteers, during Team Leader training sessions, Wayne County Department of

Public Services Environmental Services Division, and by Sue Thompson for a total of 36 sites. Funding for the monitoring was provided by the Michigan Department of Environment, Great Lakes and Energy (EGLE) through an Area of Concern Great Lakes Restoration Initiative (GLRI) Grant, Michigan Clean Water Corps (MiCorps) and Washtenaw County.

2021 Changes and Challenges

This was one of the most challenging fall monitoring events since FOTR started the program in 2001. In June, MiCorps, the statewide network of volunteer water quality monitoring programs announced major changes to the monitoring protocols. All of the Team Leaders had to be retrained and sampling equipment had to be updated. The massive downpours that southeast Michigan experienced this summer into fall caused us to repeatedly reschedule training and monitoring to avoid dangerous high water. And the ever-changing status of the pandemic kept us updating measures to keep our participants as safe as possible.

The MiCorps changes include the goal of collecting at least 100 organisms at each site and a metric to replace the Stream Quality Index Scores (SQI) called Water Quality Rating (WQR) that should better predict the degree of organic pollution than SQI. Since the old system and new system are not compatible, we will be calculating scores both ways as we transition to the new WQR. WQR can be calculated at the order level or family level. Family level is expected to be more robust but we calculated it both ways.

Overall Scores

Of the 36 sites sampled this fall, the average Stream Quality Index (SQI) was FAIR (30) (map p.7-9, Table 1 & 5). Sites averaged 13 taxa and 2 EPT. One site had an EXCELLENT SQI – John8. Twelve sites rated GOOD; 21 sites were FAIR and two sites scored POOR. Under the new WQR system (see box), scores averaged FAIR - 5.98 at the family level and 6.25 at the order level. The number of taxa found at sites was highest at John8 (22) and lowest at Evan3 (2). Some mayfly, stonefly and caddisfly families (EPT) were found at all but two sites with an average of 2 of these families per site. Three sites had the highest number of EPT (5) – John7, John8 and MR-3.

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.

NEW in Fall 2021

WQR – Water Quality Rating is a measure of the degree of organic pollution similar to **SQI**. Organisms are rated based on the Hilsenhoff Index of Biotic Integrity and scores are weighted by the number of individuals found. Unlike **SQI**, a LOWER score is indicative of less pollution. There are seven categories rather than four. 0.0-3.50=excellent, 3.51-4.50=very good, 4.51-5.50=good, 5.51-6.50=fair, 6.51-7.50=fairly poor, 7.51-8.50=poor, 8.51-10.0=very poor. **WQR** is calculated based on order level or family level identification. Family level will be more accurate.

Table 1: Averages

Average SQI	Average # of taxa	Average # EPT	WQR, Family Level	WQR, Order level
30 fair	13	2	5.98 fair	6.25 fair

Data Trends

Thirty-two sites sampled had three or more years of past data. Of these, 72% were stable, 22% were improving and 6% were declining (Chart 1). Compared to last fall, fewer sites are stable, more are improving, and more are declining.

To compare change over time, we analyzed the trends by subwatershed, with Johnson Creek analyzed separately as it is a coldwater tributary (Table 2 and graphs p. 12-18). The Middle 3 subwatershed and Johnson Creek had significant positive trends. The Main 1-2, the Upper and the Lower 1 subwatersheds had significant negative trends. These trends are similar to last year.

Table 2: Fall Bug Hunt Trend Summary All Sites 2001-2021					
Subwatershed	slope	<i>p</i> -value	True trend	Subwatershed average score	Water Quality Rating
Main 1-2	-0.4421	0.0005	yes, negative	29	Fair
Upper	-0.3005	0.0024	yes, negative	24	Fair
Johnson Creek	0.3399	0.0143	yes, positive	35	Good
Middle 1	-0.1001	0.4449	No trend	32	Fair
Middle 3*	0.4603	0.0007	yes, positive	22	Fair
Lower 1	-0.3936	0.0042	yes, negative	28	Fair
Lower 2**	-0.3116	0.1007	no trend	26	Fair
Main3-4**	-0.5329	0.2181	no trend	28	Fair
* no sites sampled in fall 2020, 2021					
**no sites sampled in fall 2019-2021					

The data was further analyzed for trends by tributaries and subareas. Table 3 contains a summary of this analysis; the graphs are on p. 12-18. None of the tributaries that were analyzed separately had significant trends.

Table 3: Fall Bug Hunt Trend Summary Branches/Tributaries 2001-2021					
Branch	slope	<i>p</i> -value	True trend	Branch average score	Water Quality Rating
Main combined (Main 1/2 and Main 3/4)	-0.4482	0.0002	yes, negative	29	Fair
Bell Creek only	-0.0673	0.7009	no trend	23	Fair
Upper only	-0.3366	0.0633	no trend	26	Fair
Middle 1 and 3 combined	0.2466	0.0375	yes, positive	30	Fair
Tonquish Creek only	0.3040	0.2063	no trend	31	Fair
Johnson Creek and Middle Rouge	0.3453	0.00003	yes, positive	31	Fair
Middle without Tonquish Creek	0.1379	0.29300	no trend	29	Fair
Lower 1 and Lower 2 combined	-0.3876	0.0001	yes, negative	27	Fair

Individual sites were examined for long term trends (Table 4). Of the sites sampled in fall 2021, one had a significant positive trend and one was negative.

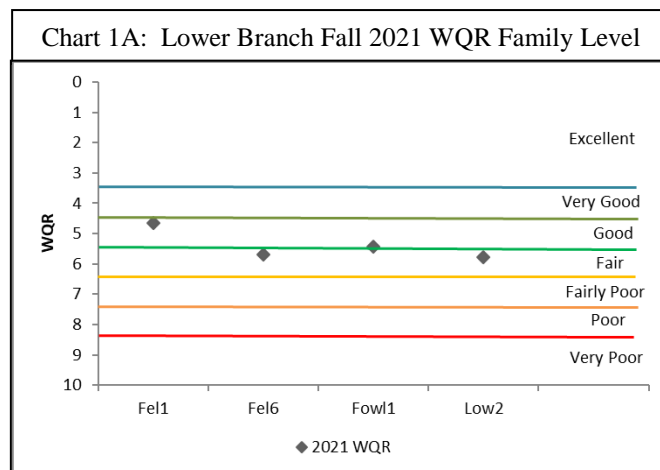
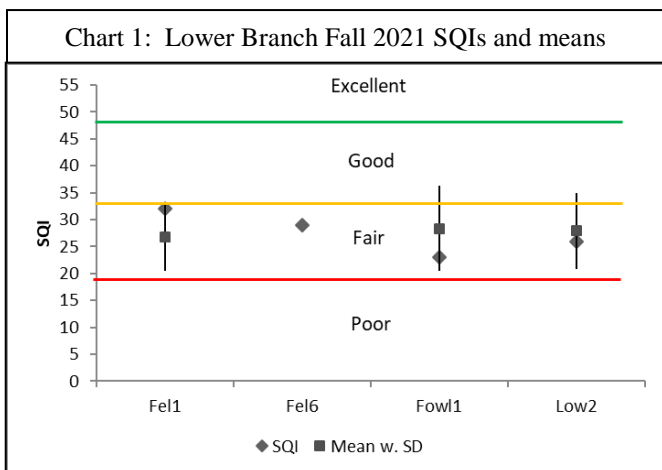
Table 4: Fall Bug Hunt Data Trend 2001-2021 by site - significant trends only					
Site	slope	p-value	Statistically significant trend	Site average score	Water Quality Rating
Ton2	0.7134	0.0241	yes, positive	22	Fair
Low2	-0.6860	0.0374	yes, negative	28	Fair

Salt Watch

Since 2020, Team Leaders have been testing sites for the effects of road salt. We started this through the Izaak Walton League's Salt Watch program and use simple test strips that test for NaCl. After finding some sites with very high levels in the winter, we decided to investigate what the background levels in spring and fall are when salt is not being applied to roads. While much of the watershed had low levels this fall, there continued to be some hot spots with levels high enough to be toxic to life in the stream. Below 100 ppm is most likely just background, over 100 ppm can be detrimental to life in the stream and 230 ppm and above is considered toxic. The Walled Lake and Upper branches continued to have sites at the toxic level. Check out the map on p. 10 to see the results. FOTR is going to continue to monitor salt concentrations during future bug hunts and is reporting its findings to the municipalities.

Lower Branch

Four sites were sampled on the Lower Branch (Table 5, Chart 1 and 1A), including two tributaries: Fellows and Fowler Creeks. SQIs averaged FAIR (27.5) for all four sites and all four sites had FAIR SQIs. In the new WQR system, sites averaged GOOD – 5.39 at the family level and FAIR at the order level – 5.63 (Chart 1A).

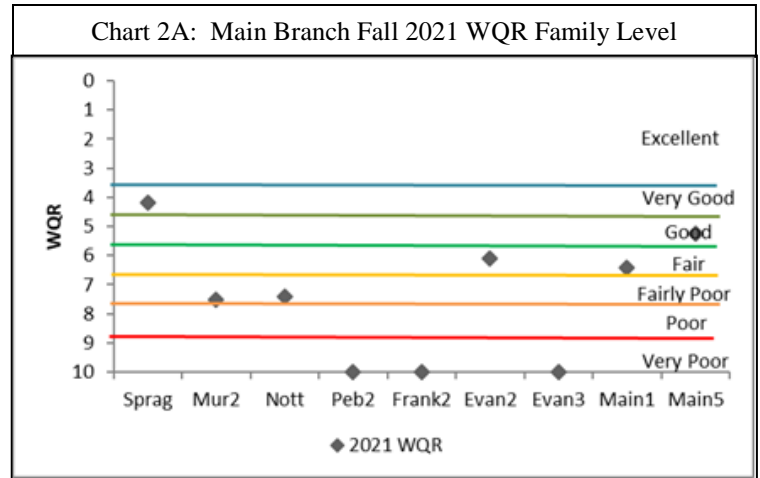
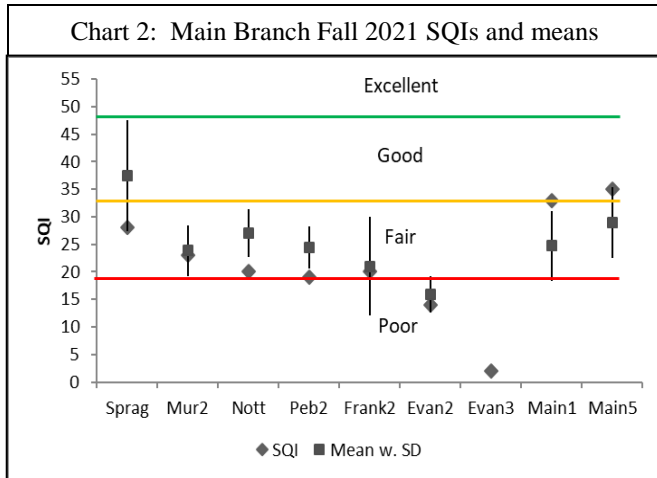


For the three sites with past data (Chart 1), all were within a standard deviation of the average for the site. Long term trend analysis showed a significant negative trend for the Lower 1 and for all of the Lower when the subwatersheds are combined (Table 2-3 above, graphs p. 17-18).

The Low2 site had a significant negative trend like last year (Table 4). This site has changed dramatically this year as a subdivision is being built on the west side of the river and the former pedestrian bridge at the site is now a road bridge.

Main Branch

Nine sites on the Main Branch were sampled, including six tributaries: Sprague, Murphy, Nottingham, Pebble, Franklin and Evans Creeks (Table 5, Chart 2 and 2A). SQIs averaged FAIR (22). One rated GOOD, six FAIR, and two POOR. WQRs averaged fairly poor (7.43-7.47) with three very poor, 2 fairly poor, 2 fair, one good and one very good. Sprag was the only “very good” WQR score this fall.



In comparing averages and past data (Chart 2), one site was above a standard deviation of the mean (Main1) and two were below (Nott & Peb2). Long term trend analysis shows a significant negative trend for the Main 1-2 subwatershed as well as for all of the Main when the subwatersheds are combined (Table 2-3 above, graphs p. 12). No sites considered separately had significant trends (Table 4).

Middle Branch

Seventeen sites were sampled on the Middle Branch including Johnson (7), Tonquish (3) and the Walled Lake drainage (4 – includes Bishop and Ingersoll Creeks) (Table 5, Charts 3, 3A, 4, 4A). SQI scores averaged GOOD (36). There was one EXCELLENT score, 11 GOOD, and five FAIR SQIs. WQRs averaged good (5.28) to fair (5.65).

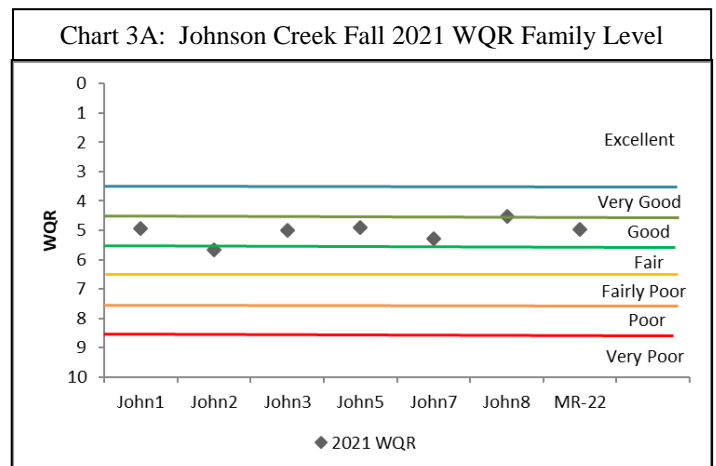
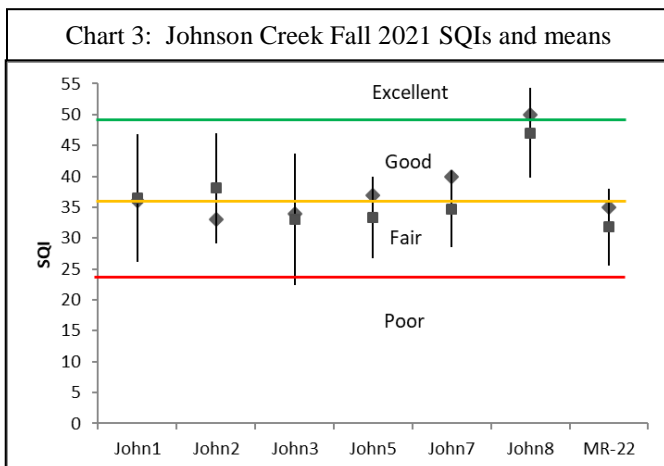


Chart 4: Middle Branch Fall 2021 SQIs and means

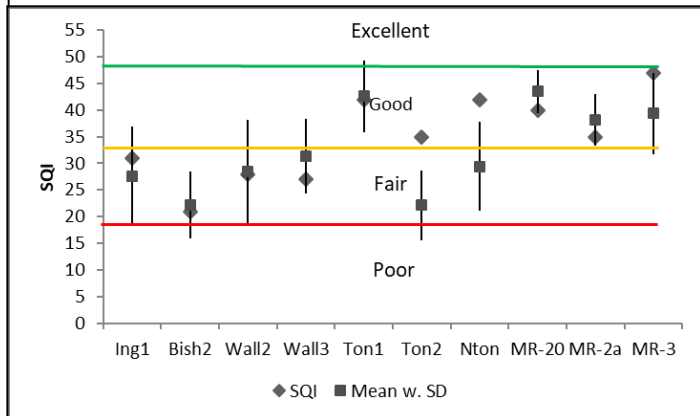
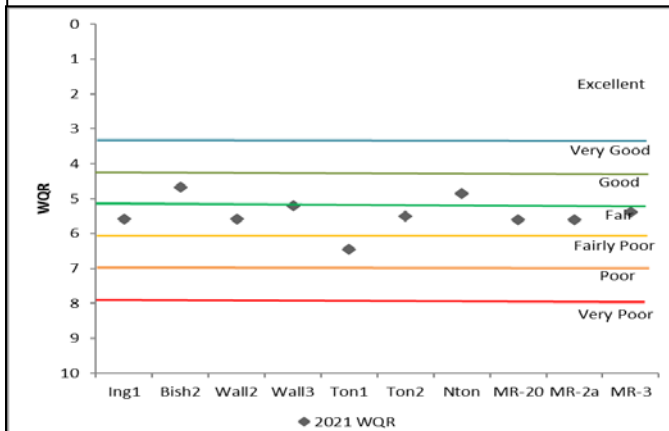


Chart 4A: Middle Branch Fall 2021 WQR Family Level



In comparing averages and past data (Chart 3 & 4), three sites were above a standard deviation of the mean (Ton2, Nton & MR-3).

In long term trend analysis, the Middle 3 and Johnson Creek had positive trends (Table 2 above, graphs p. 14-17). When the Middle 1 and Middle 3 subwatersheds were combined, there a significant positive trend (Table 3 above, graphs p. 14-16). When Johnson Creek was combined with the Middle branch, there was also a significant positive trend. Ton2 had a positive trend when considered by site (Table 4).

Upper Branch

Six Upper branch sites were sampled including Bell (3), Minnow Pond, and Seeley Creeks. SQIs averaged FAIR (28). All six sites were FAIR. WQR averaged fair (6.16) to fairly poor (6.53) with one fairly poor, one fair, and four good.

Chart 5: Upper Branch Fall 2021 SQIs and means

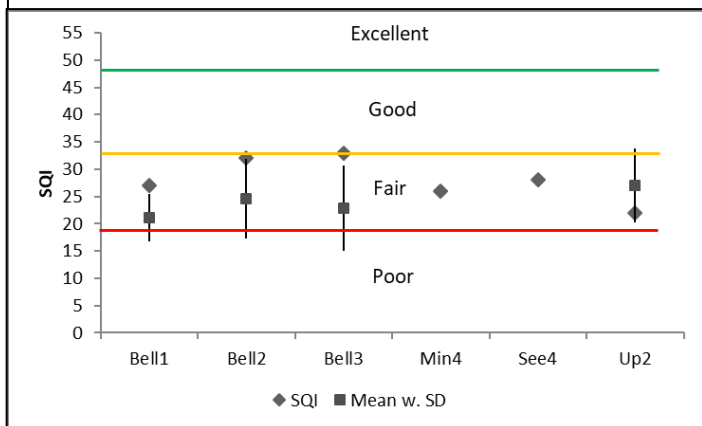
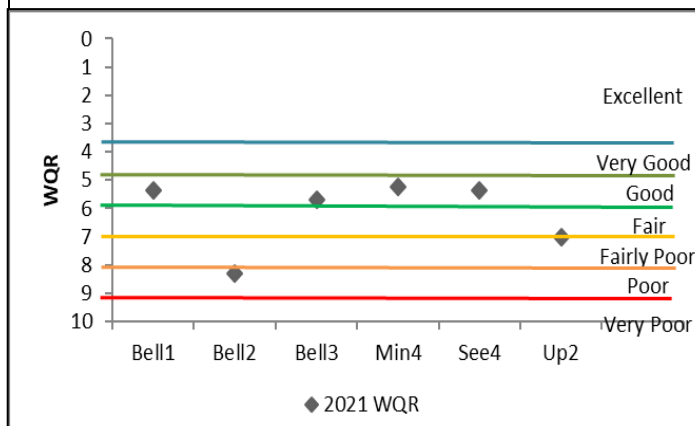


Chart 5A: Upper Branch Fall 2021 WQR Family Level



In comparing averages and past data (Chart 5), all three Bell Creek sites were above a standard deviation of the average. Long term trend analysis shows a significant decline in scores for the Upper Branch but not for Bell Creek or the Upper considered without Bell Creek (Table 2 & 3, graphs p. 13-14).

THANK YOU!!!!

Thank you to all the **volunteers** and **Team Leaders**, **Sue Thompson** for sampling additional sites, helping with identification, trend analysis and reviewing the report, biologist **Bruce McCulloch** for SQI comparison graphs and reviewing the report, and **EGLE, MiCorps, Washtenaw County Water Resources Department**, and **individual donations** for funding the program.

Join us for the **Winter Stonefly Search**

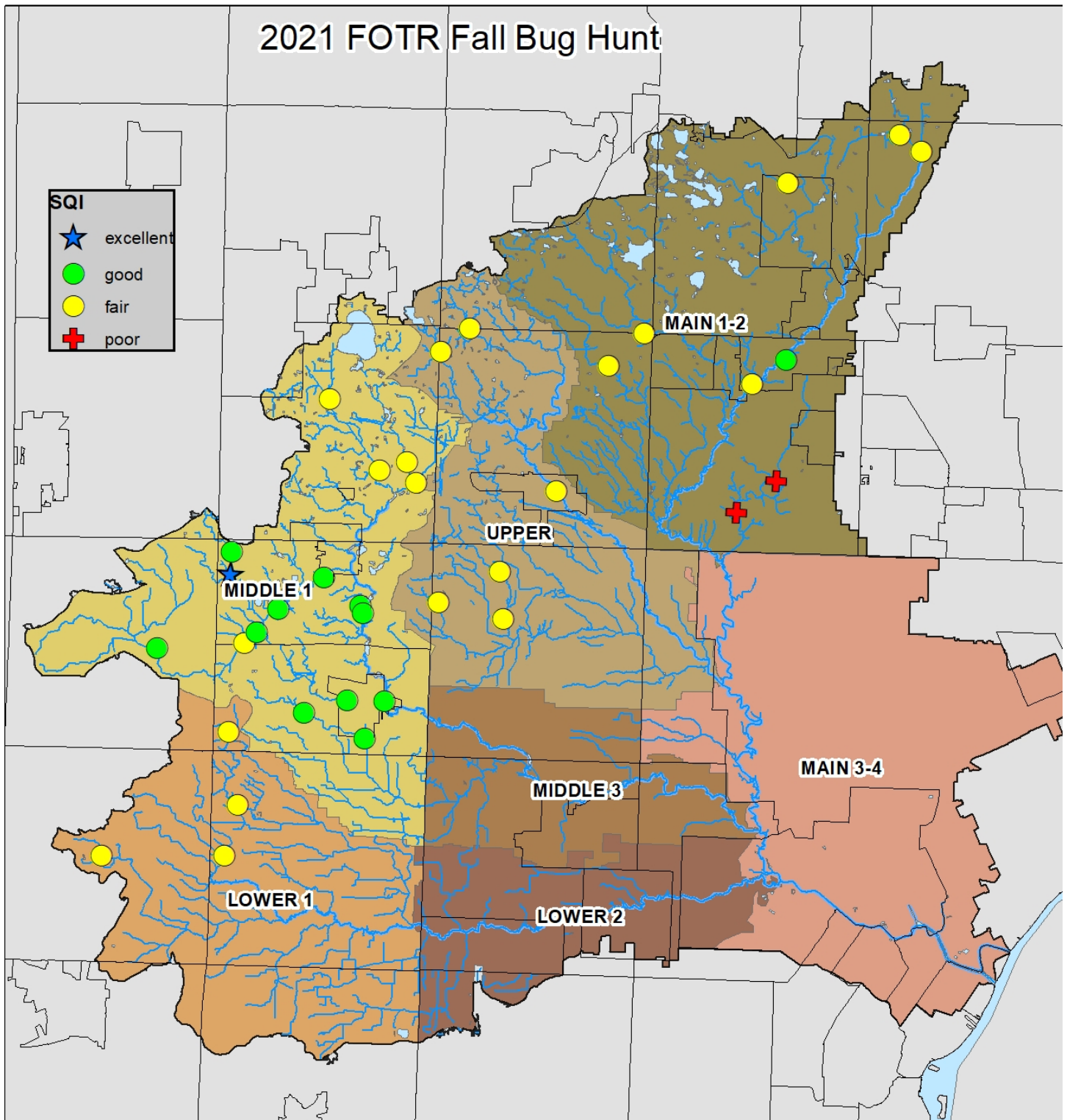
Sat. Jan. 22, 2022 9 am – 3 pm

Register at www.therouge.org by Jan. 7, 2022

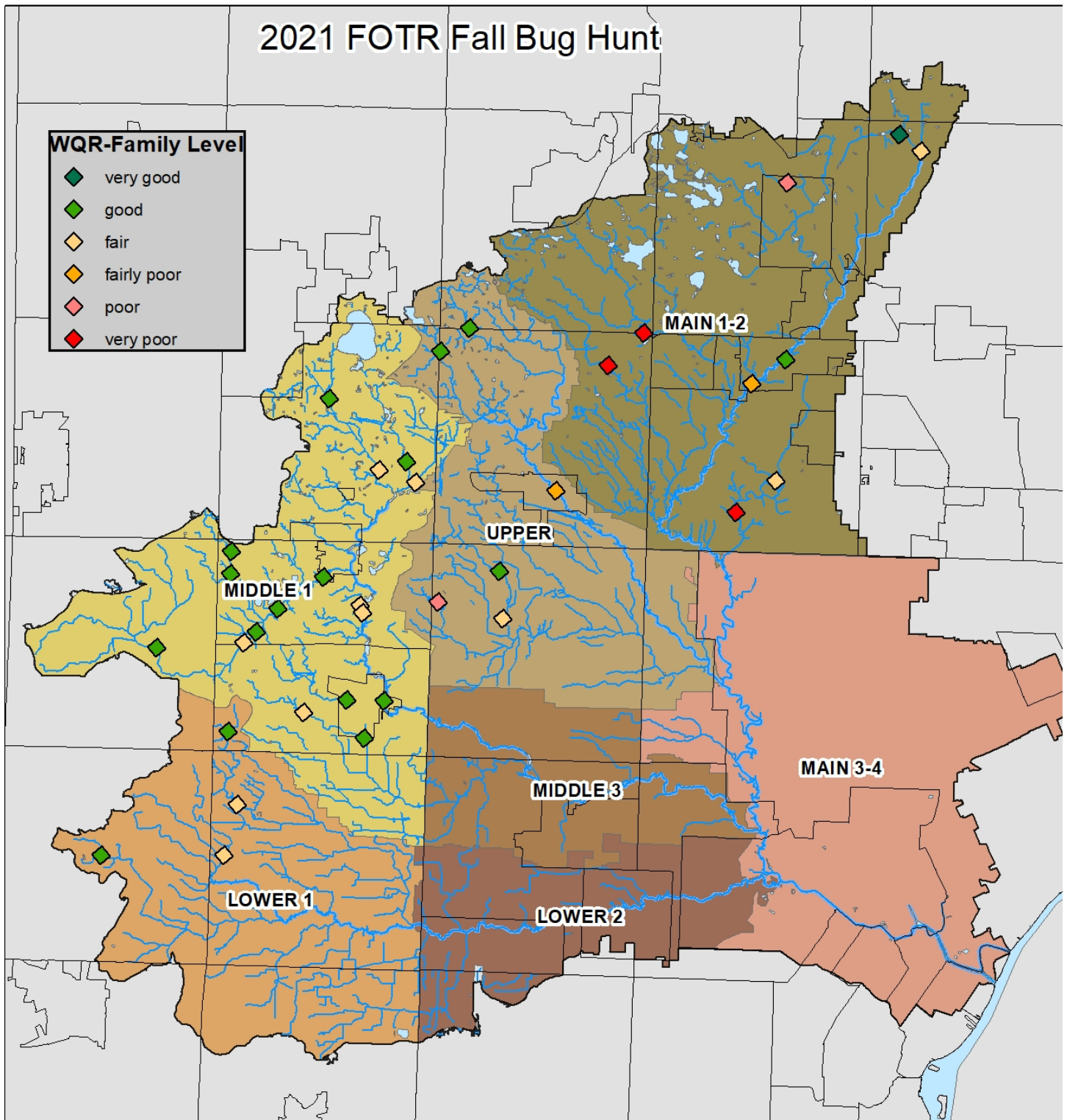
Attend the virtual Stonefly Primer Thurs. Jan. 13 6-7:00 pm on Zoom to get ready



2021 FOTR Fall Bug Hunt



2021 FOTR Fall Bug Hunt



2021 FOTR Fall Bug Hunt

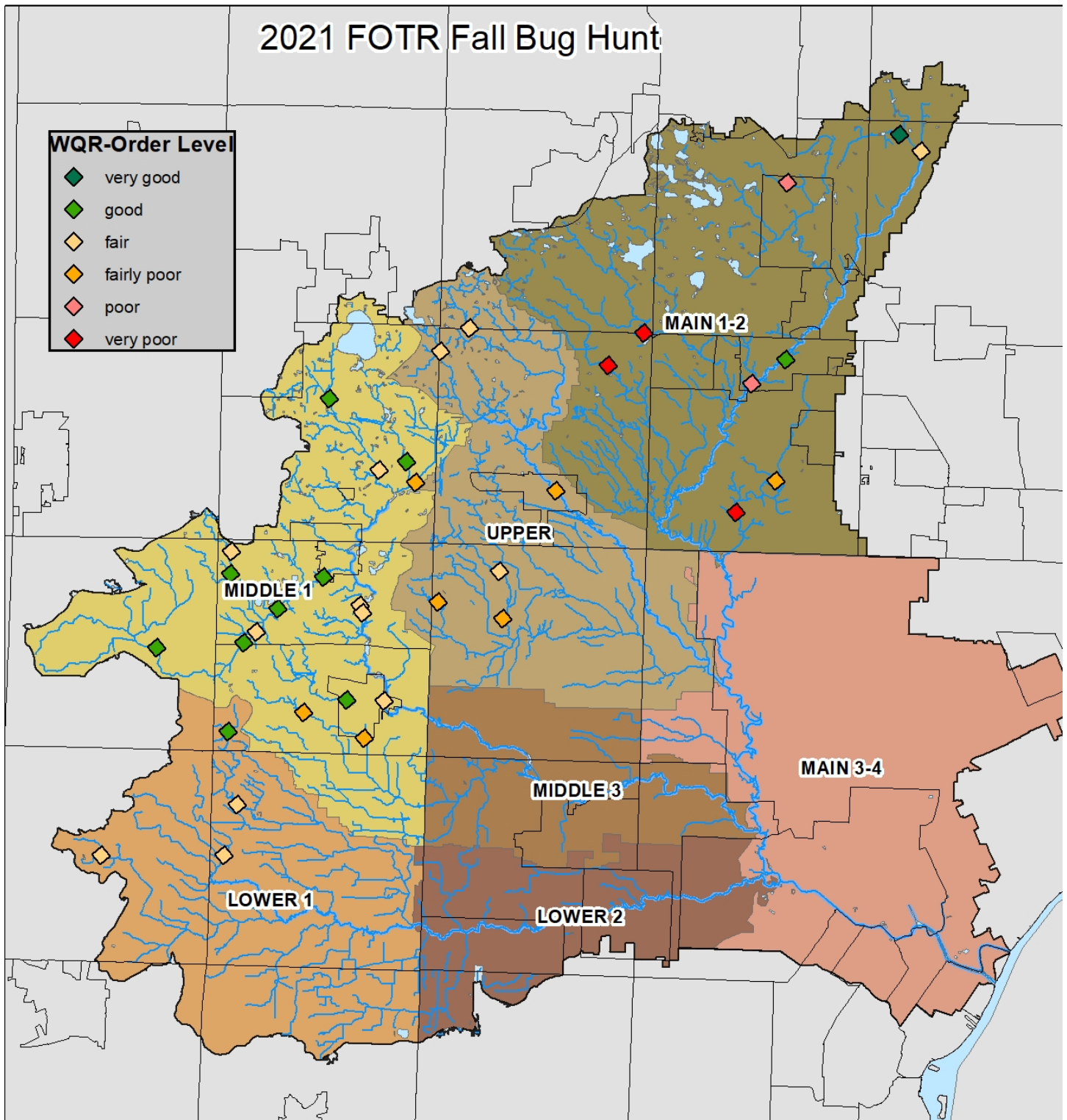
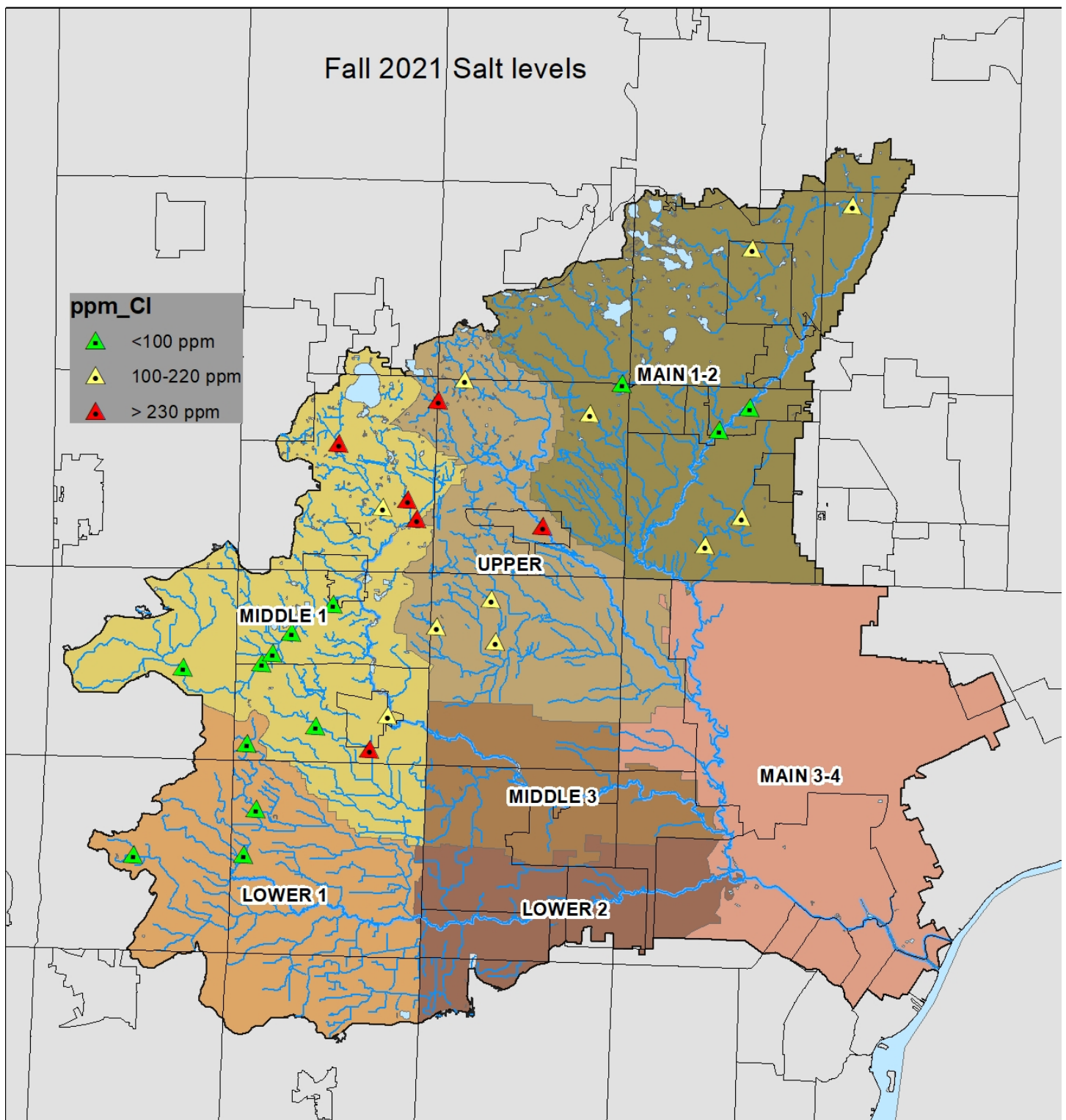


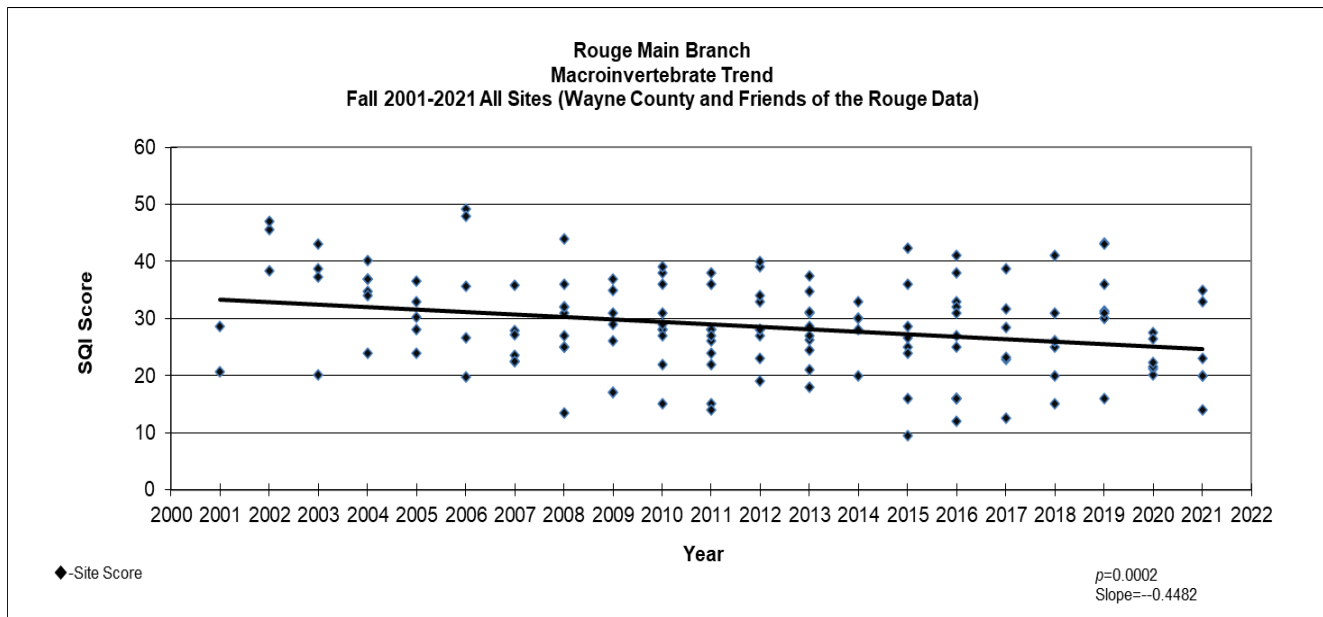
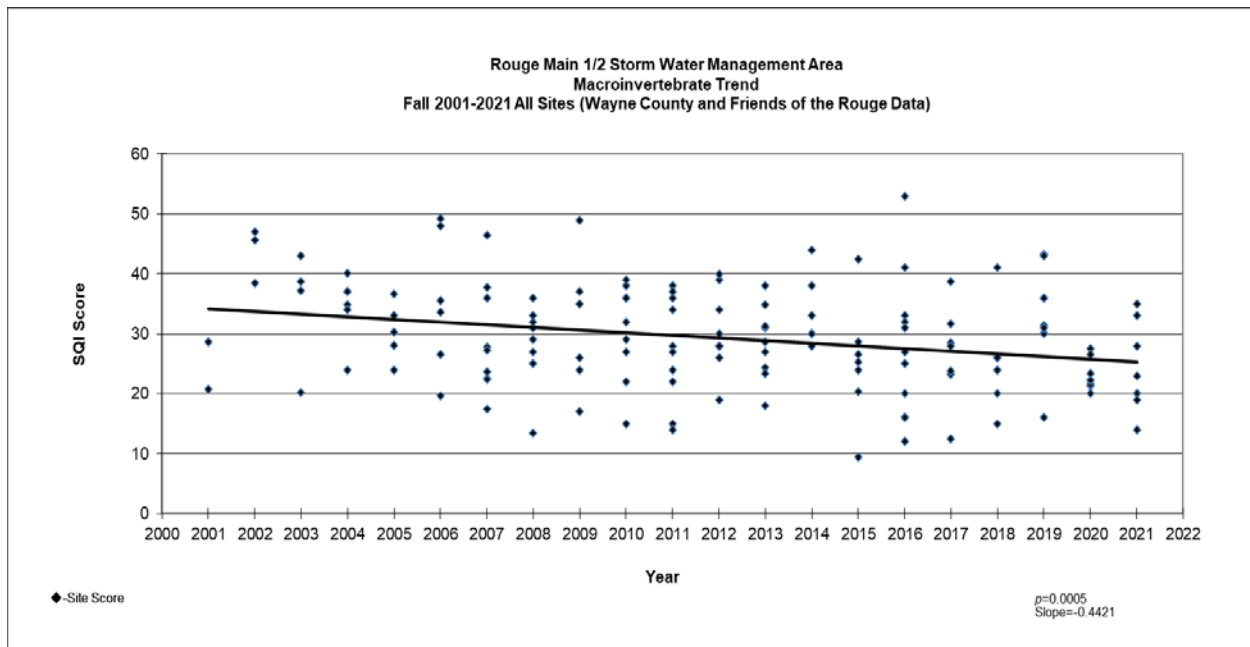
Table 5: Fall 2021 Data

Branch	Stream Name	FIELDID	Site Description	SQI	SQI rating	taxa	EPT	WQR family level	WQR family score	WQR order level	WQR order score
Lower	Fellows Creek	Fel1	Top of Hill Ct	32	fair	14	1	4.65	good	5.1	good
Lower	Fellows Creek	Fel6	Hanford	29	fair	10	2	5.69	fair	5.97	fair
Lower	Fowler Creek	Fowl1	Prospect	23	fair	10	1	5.44	good	5.78	fair
Lower	Lower Rouge	Low2	Cherry Hill	26	fair	12	2	5.77	fair	5.64	fair
Main	Evans Creek	Evan2	LTU	14	poor	8	1	6.1	fair	6.71	fairly poor
Main	Evans Creek	Evan3	9 Mile Road	2	poor	2	0	10	very poor	10	very poor
Main	Franklin Creek	Frank2	Ink Pump Sta	20	fair	8	1	10	very poor	10	very poor
Main	Main Rouge	Main1	FF Pk	33	fair	15	2	6.43	fair	6.24	fair
Main	Main Rouge	Main5	Douglas Evans	35	good	15	2	5.23	good	5.05	good
Main	Murphy Creek	Mur2	Roeper School	23	fair	8	1	7.51	poor	7.58	poor
Main	Nottingham Creek	Nott	Country Day	20	fair	9	0	7.42	fairly poor	7.72	poor
Main	Pebble Creek	Peb2	Pebble 13 Mile	19	fair	6	1	10	very poor	10	very poor
Main	Sprague Creek	Sprag	Main Lloyd Stage	28	fair	13	2	4.19	very good	3.89	very good
Middle	Bishop Creek	Bish2	Scarborough	21	fair	9	1	4.67	good	5.09	good
Middle	Ingersoll Creek	Ing1	Brookfarm Park	31	fair	14	1	5.58	fair	6.72	fairly poor
Middle	Johnson Creek	John1	5M Salem	36	good	17	4	4.95	good	4.88	good
Middle	Johnson Creek	John2	5M NV	33	fair	20	4	5.66	fair	5.48	good
Middle	Johnson Creek	John3	6M NV	34	good	16	3	5	good	5.12	good
Middle	Johnson Creek	John5	Fish Hatchery Pk	37	good	15	2	4.91	good	4.62	good
Middle	Johnson Creek	John7	Arcadia	40	good	20	5	5.28	good	5.57	fair
Middle	Johnson Creek	John8	Maybury Angell	50	excellent	22	5	4.52	good	4.9	good
Middle	Johnson Creek	MR-22	Maybury south	35	good	15	2	4.96	good	6.13	fair
Middle	Middle Rouge	MR-20	Waterford Bd	40	good	21	4	5.6	fair	6.16	fair
Middle	Middle Rouge	MR-2a	Reservoir Rd W	35	good	15	4	5.61	fair	5.6	fair
Middle	Middle Rouge	MR-3	Plym Riverside	47	good	19	5	5.39	good	5.7	fair
Middle	Tonquish Creek	Nton	S Evergreen St	42	good	16	2	4.85	good	5.32	good
Middle	Tonquish Creek	Ton1	Plym Twp Pk	42	good	17	3	6.45	fair	7	fairly poor
Middle	Tonquish Creek	Ton2	Ann Arbor Rd	35	good	17	2	5.5	good	6.82	fairly poor
Middle	Walled Lk Drainage	Wall2	WL 10 M	28	fair	15	2	5.59	fair	5.77	fair
Middle	Walled Lk Drainage	Wall3	WL 12 M	27	fair	12	1	5.2	good	5.23	good
Upper	Bell Branch	Bell1	Bicentennial Park	27	fair	12	2	5.37	good	5.6	fair
Upper	Bell Branch	Bell2	Schoolcraft College	32	fair	12	1	8.3	poor	7.42	fairly poor
Upper	Bell Branch	Bell3	Livonia 6 Mile	33	fair	13	1	5.7	fair	7.29	fairly poor
Upper	Minnow Pond	Min4	14 Mile	26	fair	15	1	5.22	good	6.38	fair
Upper	Seeley Creek	See4	Haggerty Rd	28	fair	8	2	5.38	good	5.51	fair
Upper	Upper Rouge	Up2	Shiawassee Park	22	fair	8	1	7	fairly poor	7	fairly poor

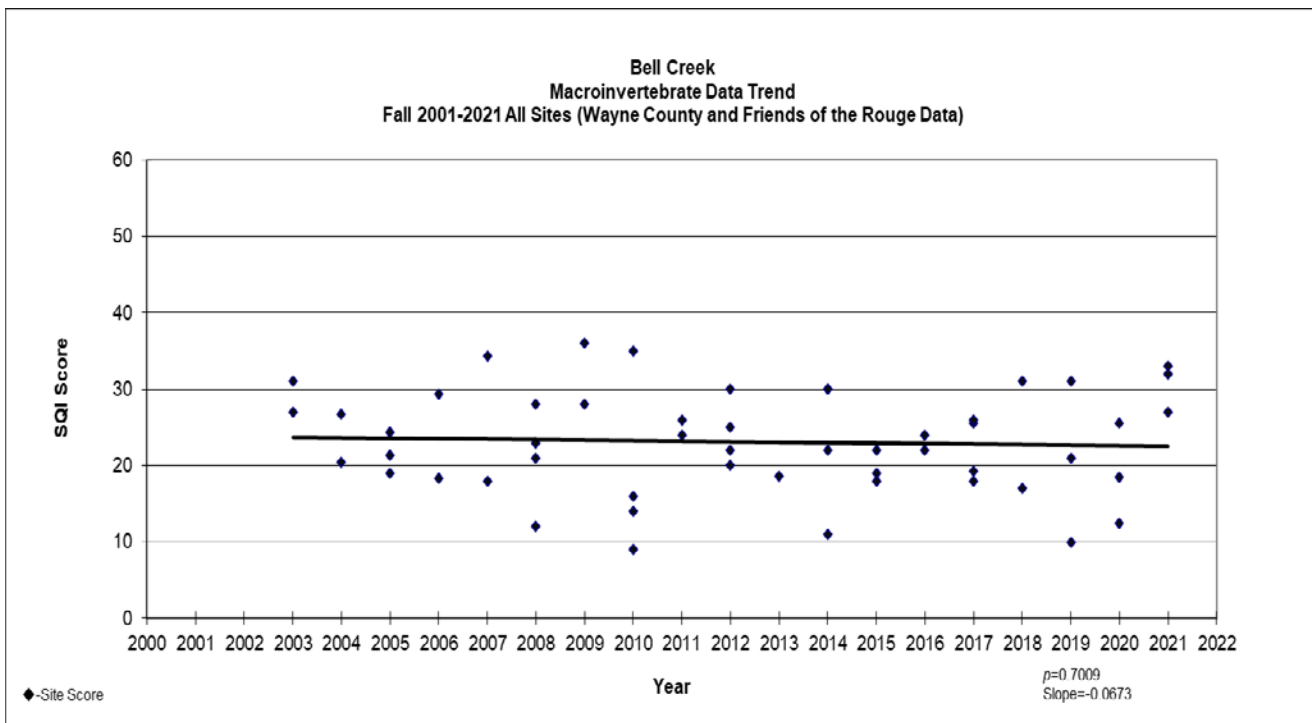
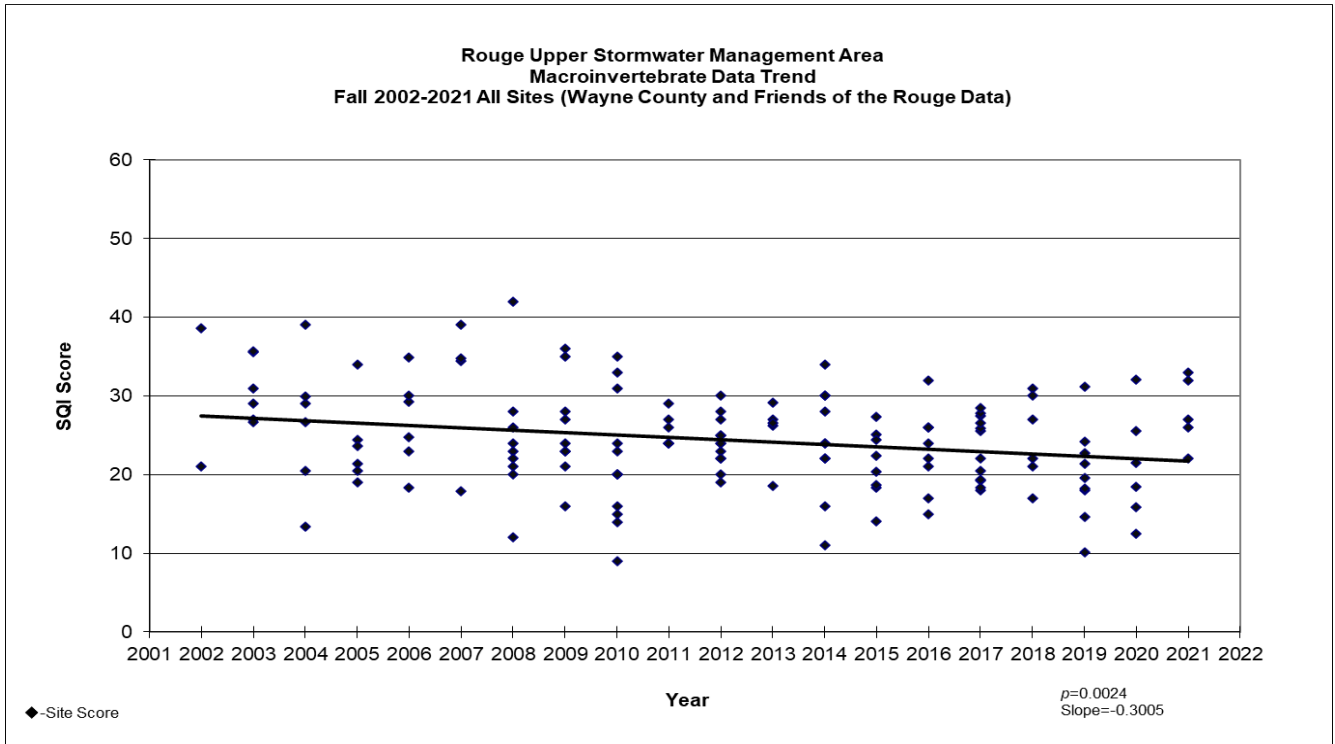


Data Trend Tables

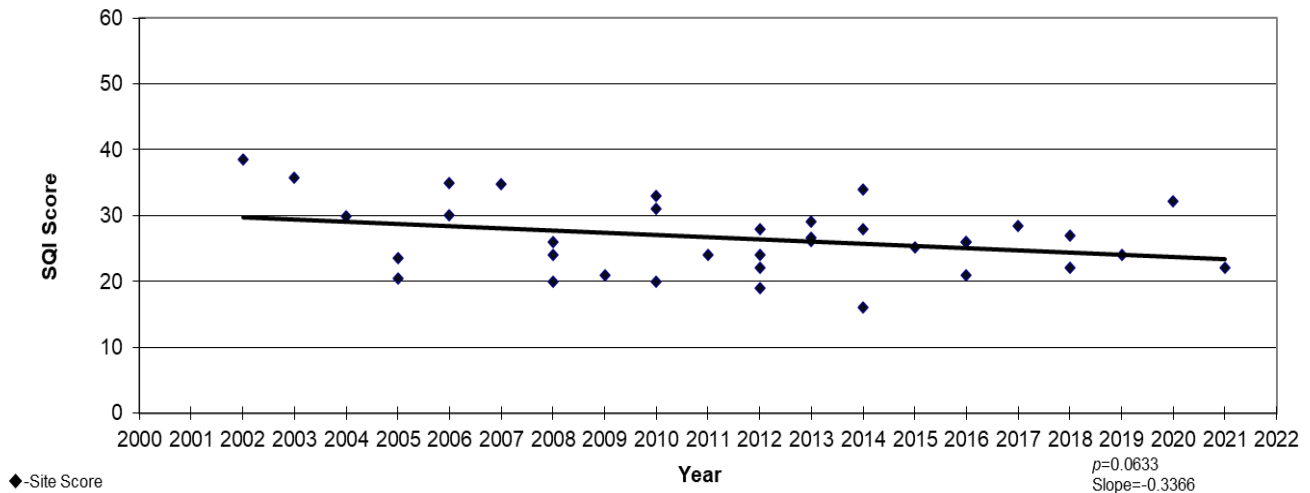
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Upper

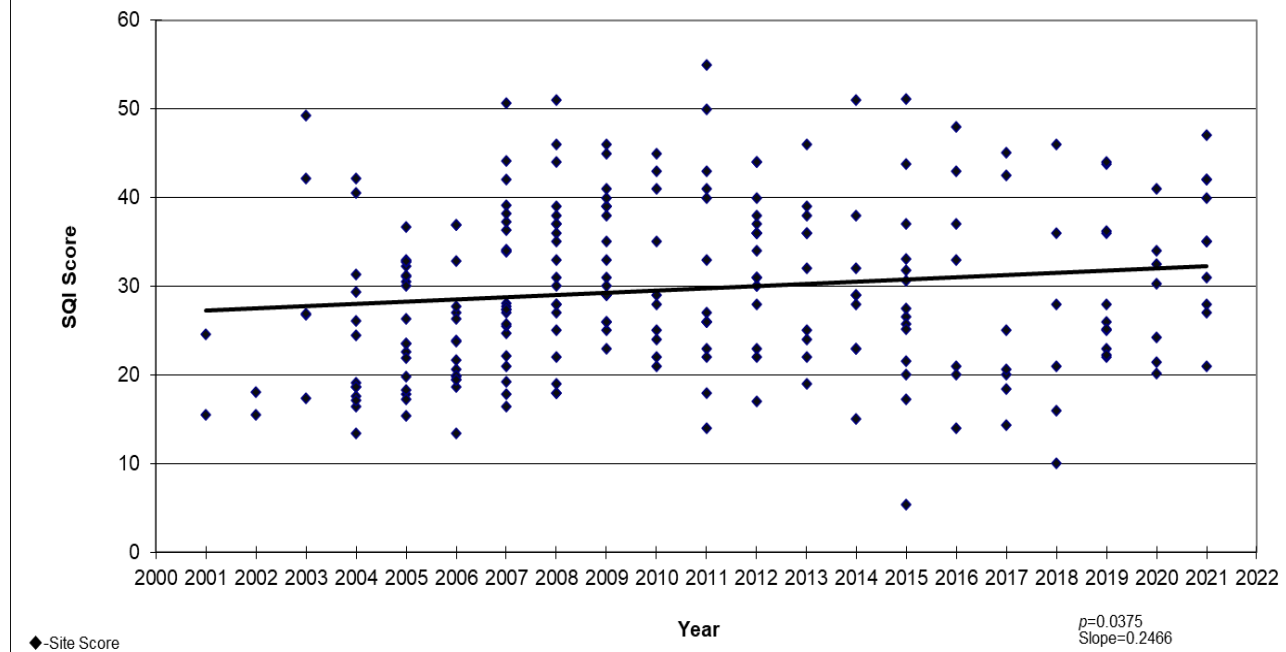


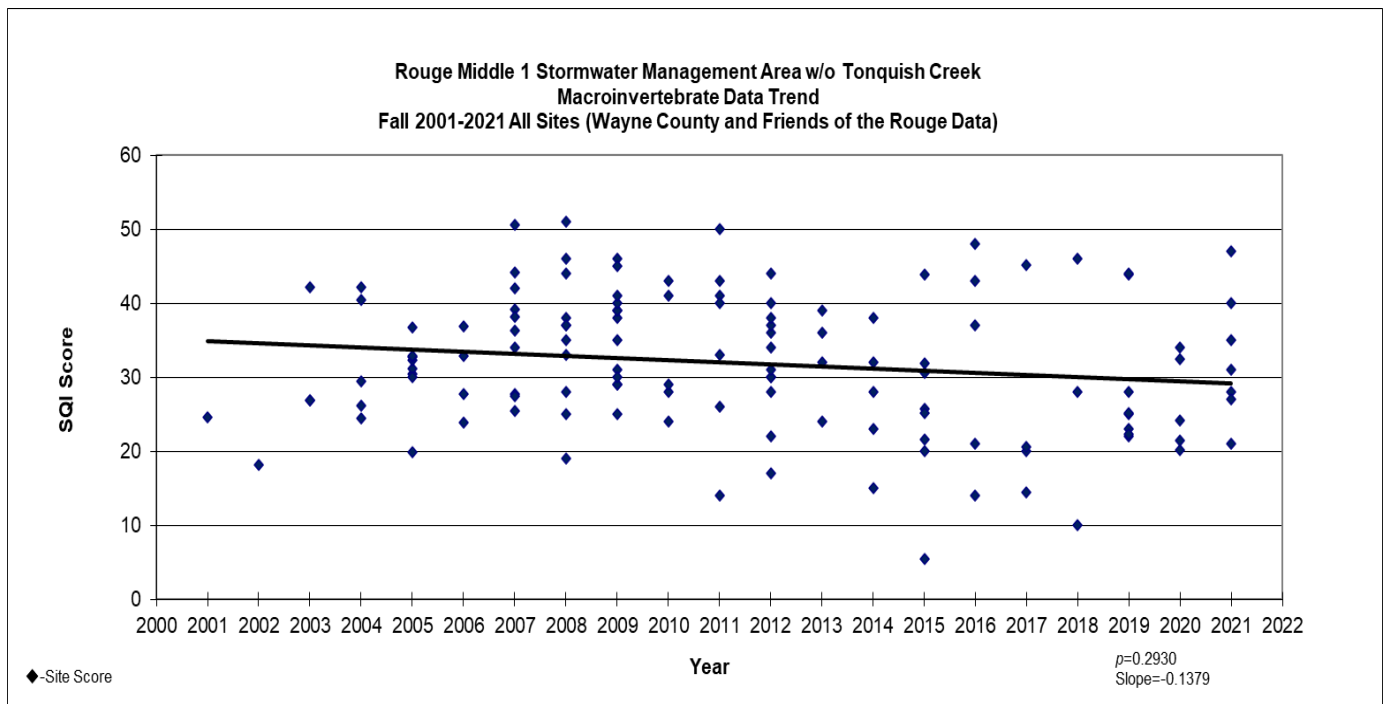
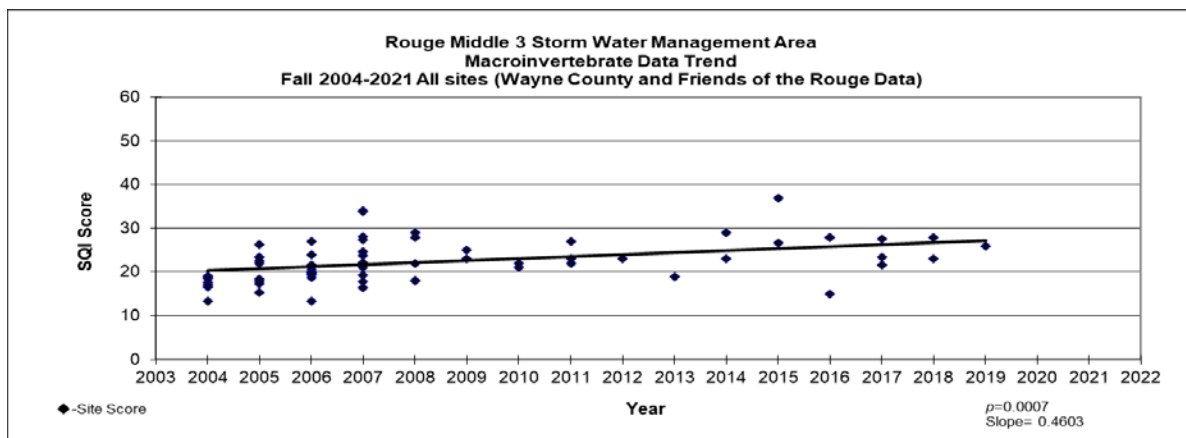
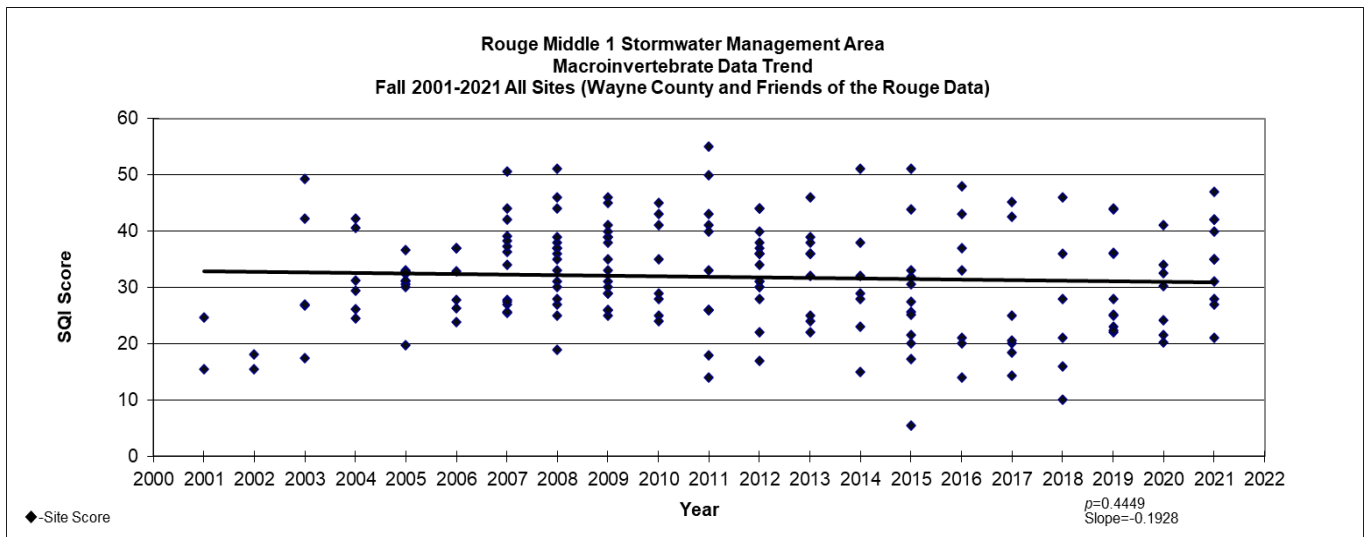
Upper Rouge
Macroinvertebrate Data Trend
Fall 2001-2021 All Sites (Wayne County and Friends of the Rouge Data)



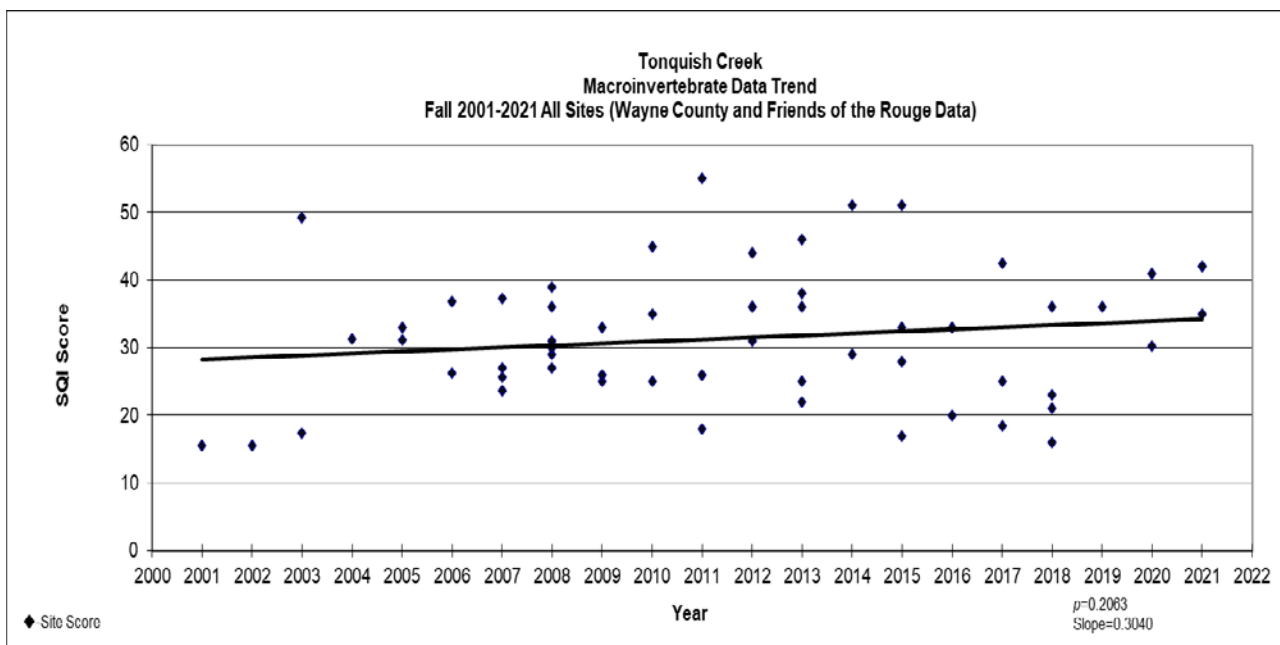
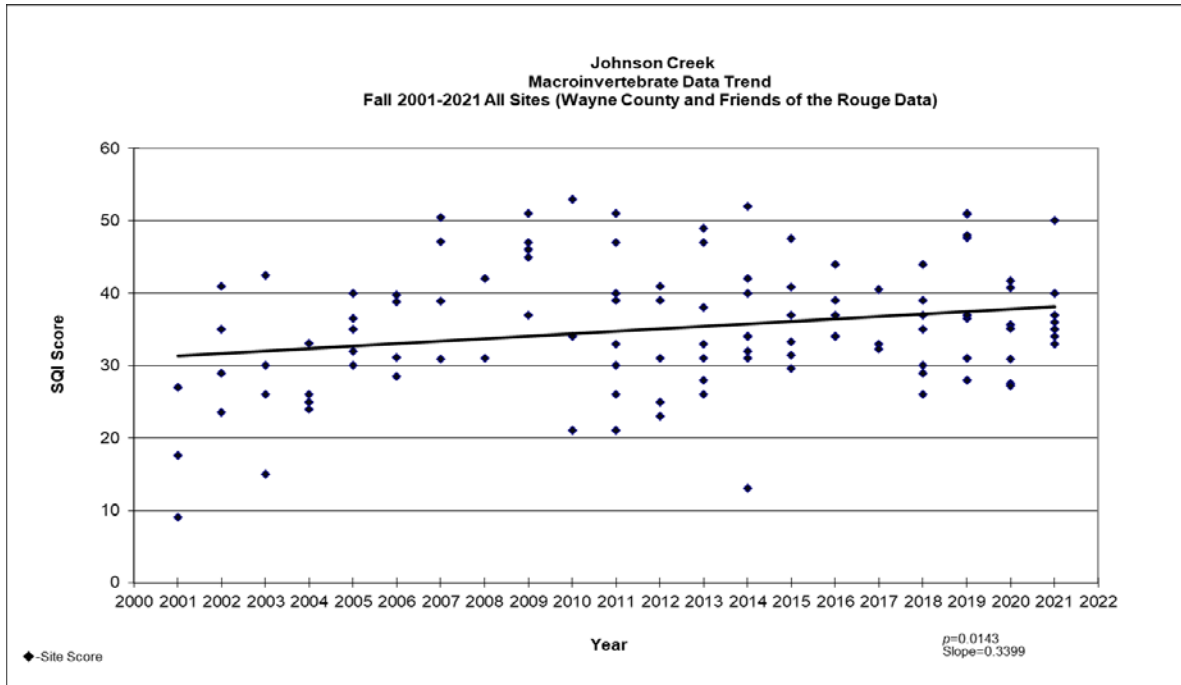
Middle

Rouge Middle Branch
Macroinvertebrate Data Trend
Fall 2001-2021 All Sites (Wayne County and Friends of the Rouge Data)

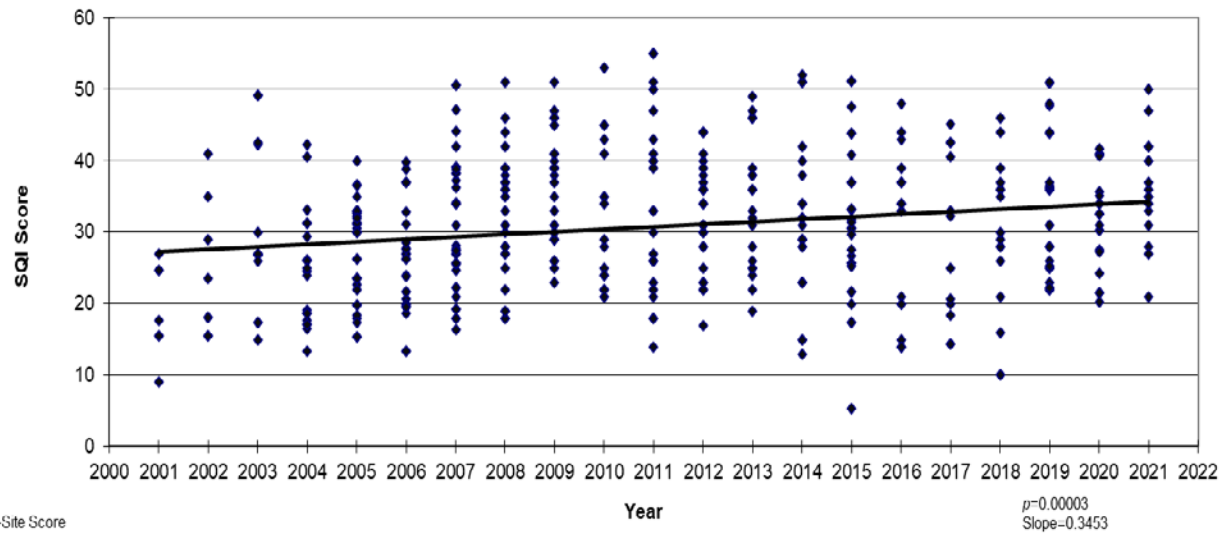




Middle Tributaries

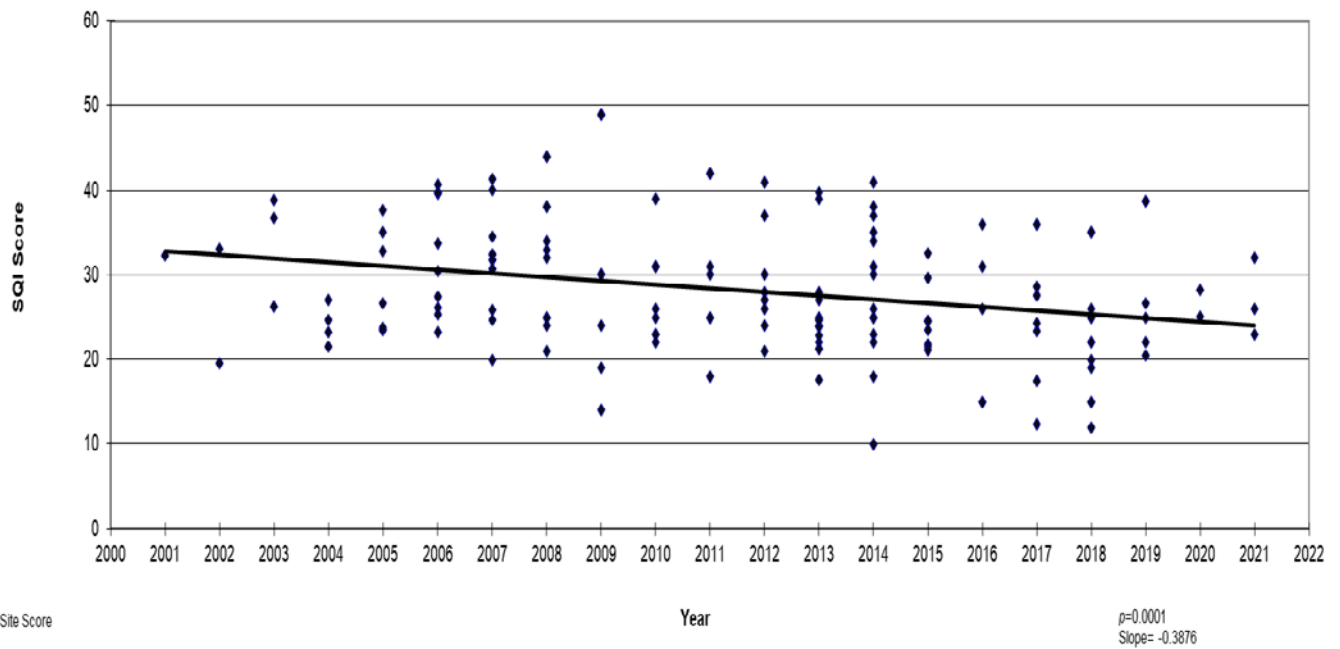


Rouge Middle Branch and Johnson Creek
Macroinvertebrate Data Trend
Fall 2001-2021 All Sites (Wayne County and Friends of the Rouge Data)

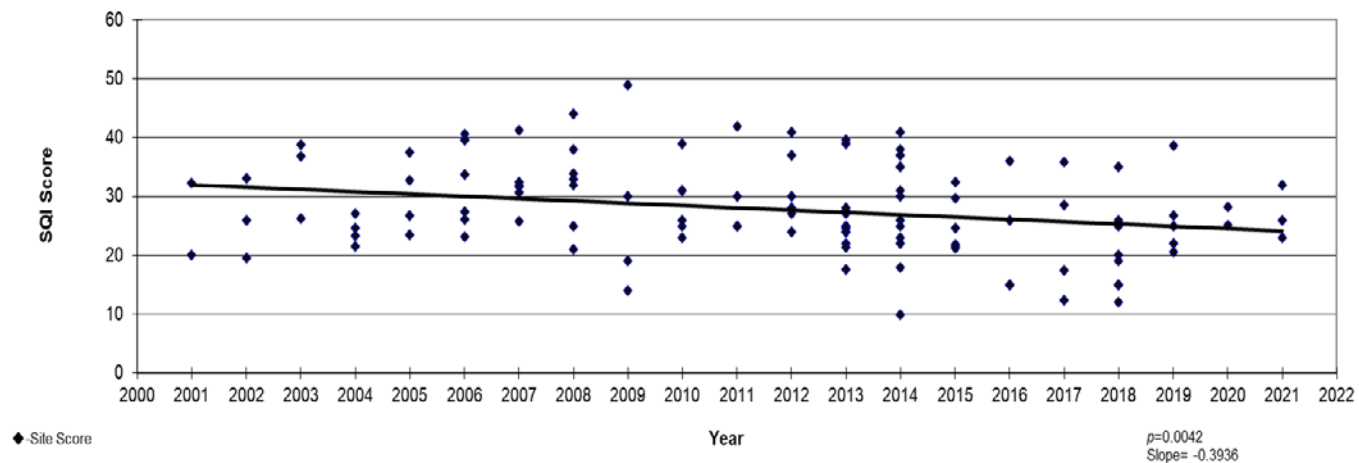


Lower

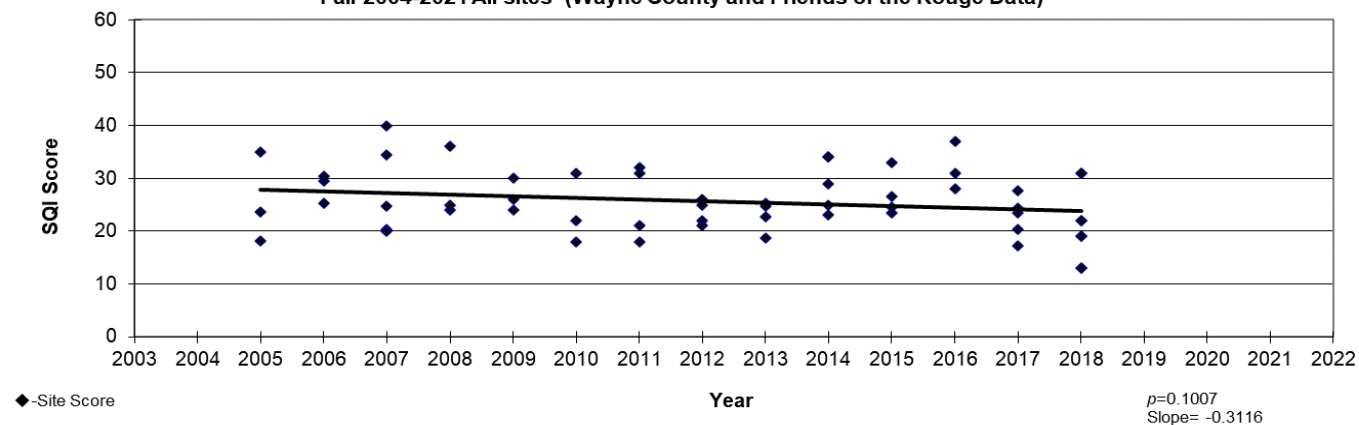
Rouge Lower Branch
Macroinvertebrate Data Trend
Fall 2001-2021 (Wayne County and Friends of the Rouge Data)



Rouge Lower 1 Storm Water Management Area
Macroinvertebrate Data Trend
Fall 2001-2021 All sites (Wayne County and Friends of the Rouge Data)



Rouge Lower 2 Storm Water Management Area
Macroinvertebrate Data Trend
Fall 2004-2021 All sites (Wayne County and Friends of the Rouge Data)



2021 Spring Bug Hunt Report



www.therouge.org
650 Church Street Suite 209
Plymouth, MI 48170
734-927-4904

Rouge River Benthic Monitoring Program Spring 2021 Report

This report covers benthic macroinvertebrate monitoring at 35 sites on Rouge River tributaries and branches in the spring of 2021. Most were sampled during the Spring Bug Hunt on April 17, 2021 where 101 attendees sampled 25 sites in 13 teams. Two sites were sampled as part of the spring training for Team Leaders on April 10. An additional eight sites were sampled by Sue Thompson on her own and leading teams of FOTR volunteers.

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.

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

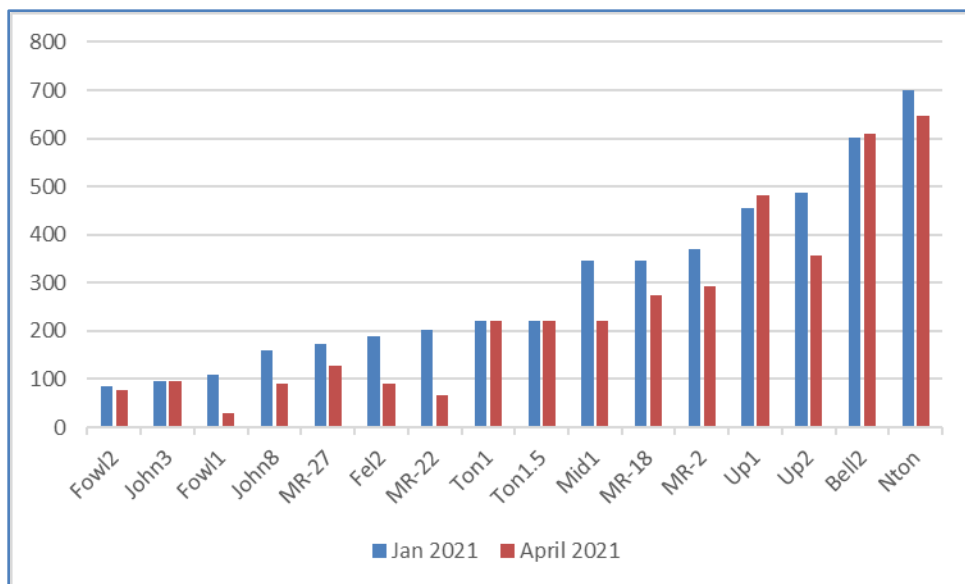
Fifty-four percent of the sites (19/35) had FAIR Stream Quality Index scores (SQI) with an average score of 30 (Table 3 p. 10, map p. 8). Eleven sites rated GOOD and four sites had POOR scores. There was one EXCELLENT score. The number of taxa at each site ranged from a low of four to a high of 21, with an average of 12. The number of insect taxa ranged from 2-15 with an average of eight. The number of EPT (see sidebar) ranged from zero to five with an average of two. Nine sites had sensitive families including Rhyacophilidae, Corydalidae, Leptophlebiidae, Lepidostomatidae, and Perlodidae and Nemouridae.

Road Salt

FOTR began testing sites for road salt during the Winter Stonefly Search in 2020 at the request of the Izaak Walton League using their simple test strip for chloride. After finding levels that would affect aquatic life at many sites in 2020 and 2021, FOTR decided to test the sites in the spring and fall to see how levels change when roads are no longer being salted. While a few sites showed a reduction in levels in spring, many were

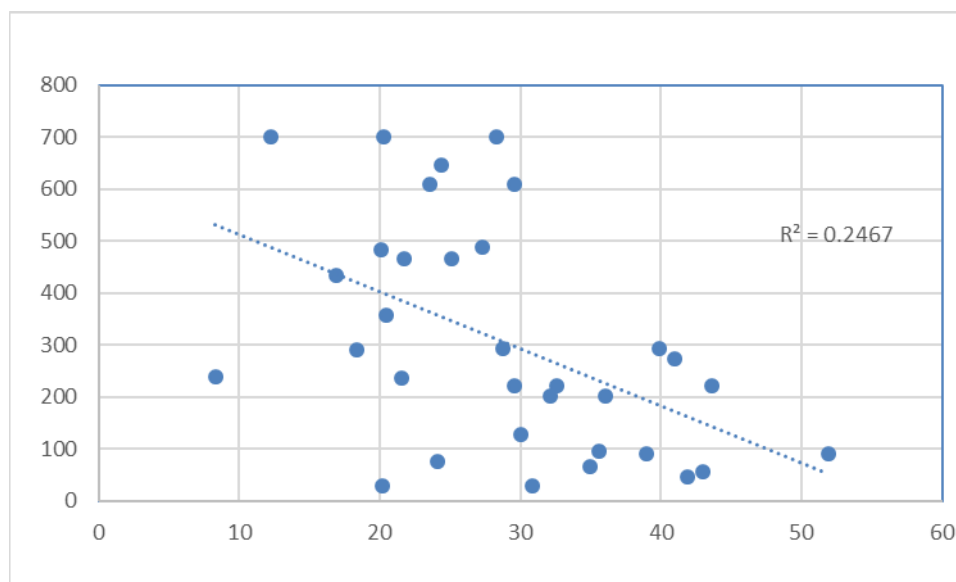
similar to their January reading or slightly increased (Chart 1)

Chart 1: Chloride ppm Winter vs. Spring 2021



Is the chloride affecting aquatic life? According to the EPA, chloride levels above 230 ppm in freshwater systems kill fish slowly and levels above 860 ppm kill fish quickly. We plotted the chloride levels against the Stream Quality Index score and found a significant negative relationship between high chloride levels and Stream Quality Index scores. All sites with SQI scores above 30 or GOOD had chloride readings below 300 ppm.

Chart 2: Chloride ppm vs Stream Quality Index



Data Trends

We compared the spring 2021 scores to the average for each site. We did not include Wall1 since major construction in the stream prevented the team from fully sampling. Of the 34 sites, four (12%) scored above a standard deviation of the mean, four (12%) were below and 26 (76%) were stable.

To compare trends over time, we analyzed the trends in SQIs over time (Table 1, p. 3; graphs p. 12-15). The Middle 1 and the Middle 3 subwatersheds are showing significant positive trends, even when combined. No other subwatershed had significant trends.

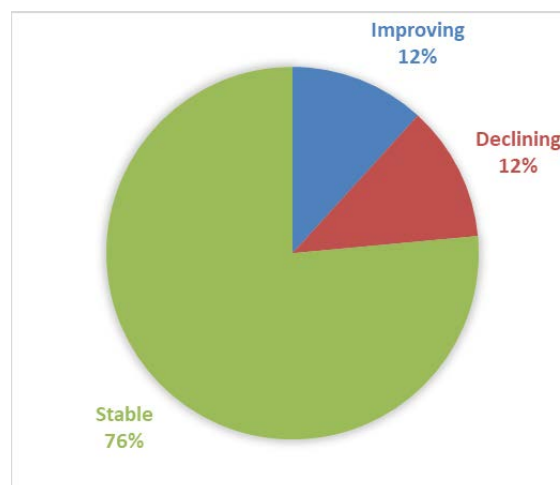


Table 1: Spring Data Summary 2001-2021					
Branch	slope	p-value	True trend	Subwatershed average score	Water Quality Rating
Main 1-2	0.0217	0.8535	no trend	27	Fair
Main3-4*	-0.1351	0.7504	no trend	25	Fair
Upper	-0.0953	0.4177	no trend	24	Fair
Johnson Creek	0.2493	0.1248	no trend	39	Good
Middle 1	0.6546	0.0002	yes, positive	30	Fair
Middle 3*	0.5756	0.0110	yes, positive	20	Fair
Lower 1	0.0885	0.5356	no trend	30	Fair
Lower 2*	-0.1050	0.6097	no trend	26	Fair
Middle 1 and Middle 3 combined	0.689	0.000005	yes, positive	27	Fair
*no sites sampled in spring 2021 in these subareas					

In addition to the trend analysis by subwatershed, a site-by-site analysis of all the sites was done (Table 2). Two sites had significant trends for the individual sites. MR-22 had a negative trend in 2019 and this continues. MR-27 just started to show a negative trend this spring. New development upstream is most likely affecting these sites.

Table 2: Spring Bug Hunt Trends by Site 2001-2021						
Site	p-value	Slope	True trend	Average SQI	Water Quality Rating	notes
MR-22	0.0190	-1.0085	yes, negative	40	Good	continues negative trend
MR-27	0.0148	-3.6774	yes, negative	46	Good	new negative trend

Lower Branch

Five sites were sampled on the Lower Branch of the Rouge (see Table 3): two sites on Fowler Creek, one on Fellows Creek and two main branch sites. Two sites scored FAIR and three GOOD. The average SQI was 34, GOOD. The number of taxa ranged from 8-16 and EPT 2-6. Two sensitive families were found at Low2: Free-living caddisflies (Rhyacophilidae) and Perlodid stoneflies (Perlodidae). Free-living caddisflies were also found at Fowl1. Chloride levels were low in all Lower sites (30-91 ppm, map p. 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. 12). In comparison to past data, three sites (Fel2, Low2 and LR-12) were above a standard deviation of the mean (Chart 3), one was below (Fowl1) and one average (Fowl2).

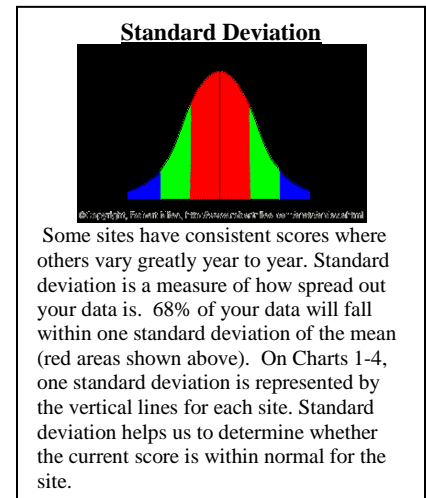
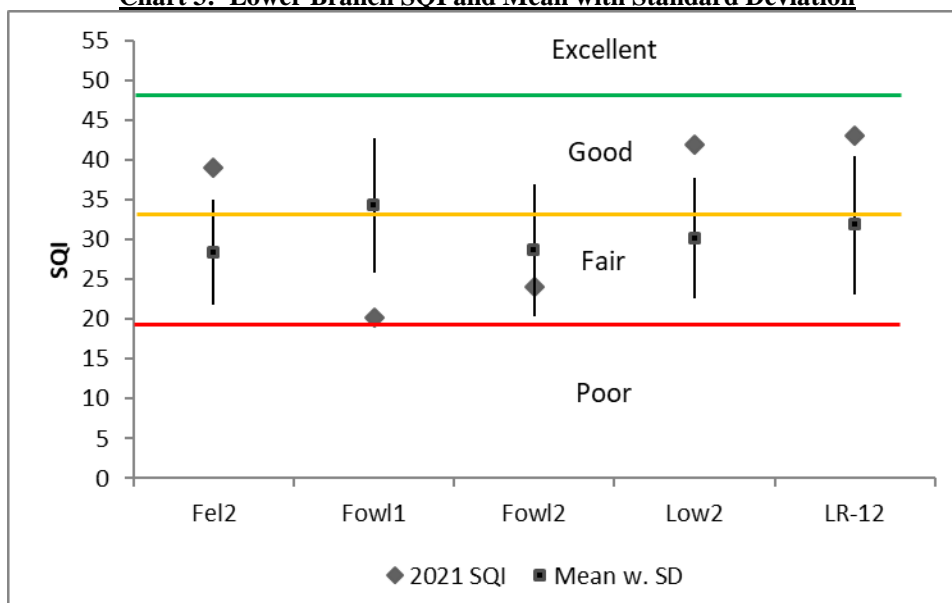


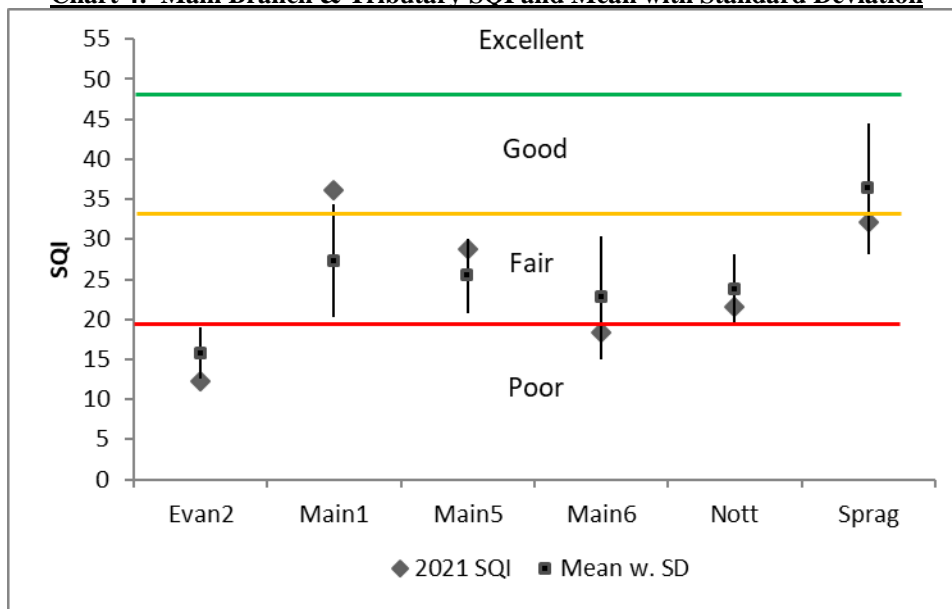
Chart 3: Lower Branch SQI and Mean with Standard Deviation



Main Branch

Six sites on the Main Branch were sampled, including Evans Creek, Sprague and Nottingham Creeks. One scored GOOD, three FAIR and two POOR with an average score of 25 (FAIR). The number of taxa ranged from 6-14 and EPT 1-3. No sensitive families were found. The Main 1/2 subwatershed did not show any significant trend (Table 1, graph p. 13). In comparison with past data (Chart 4) four sites were average, one was above a standard deviation of the mean (Main1) and one was below a standard deviation of the mean (Evan2). When analyzed by site (Table 2), no site had a significant trend. Chloride levels were all above 200 in the Main branch sites and Evan2 was at 700 ppm (map p. 8).

Chart 4: Main Branch & Tributary SQI and Mean with Standard Deviation



Middle Branch

Nineteen sites were sampled on the Middle branch including three tributaries: Johnson, Tonquish and Walled Lake Branch (includes Bishop and Ingersoll) Creeks. The average score for the Middle Branch was FAIR (32). One site scored EXCELLENT (John8), seven sites scored GOOD, nine FAIR, one and two POOR. The number of insect taxa ranged from 2-15 and EPT 0-6. Sensitive families were found at seven sites. Most (five) of these sites were on the Johnson Creek. Lepidostomatid casemaker caddisflies were a surprise find at MR-18 as were dobsonflies (Corydalidae) at Bish2. For both of these sites, this was a first time for any sensitive species.

Salt levels were low in the Johnson Creek (30-129), high in the Tonquish Creek and Walled Lake branches (222-700) and medium downstream in the Middle Branch (222-293) (map p. 8).

Average scores for the Middle1 and the Middle3 subwatersheds had significant positive trends (Table 1, graphs p. 14-15). In comparison with past data (Chart 5-8), most sites were within a standard deviation of the mean with the exception of MR-27 on the Johnson Creek and Wall3 which were both below. Sediment from upstream development was noted at MR-27. Wall1 was also very low but construction in the creek limited the sampling. When sites were analyzed individually, MR-22 continues a significant negative trend and MR-27 has started to decline this spring (Table 2).

Chart 5: Johnson Creek SQI and Mean with Standard Deviation

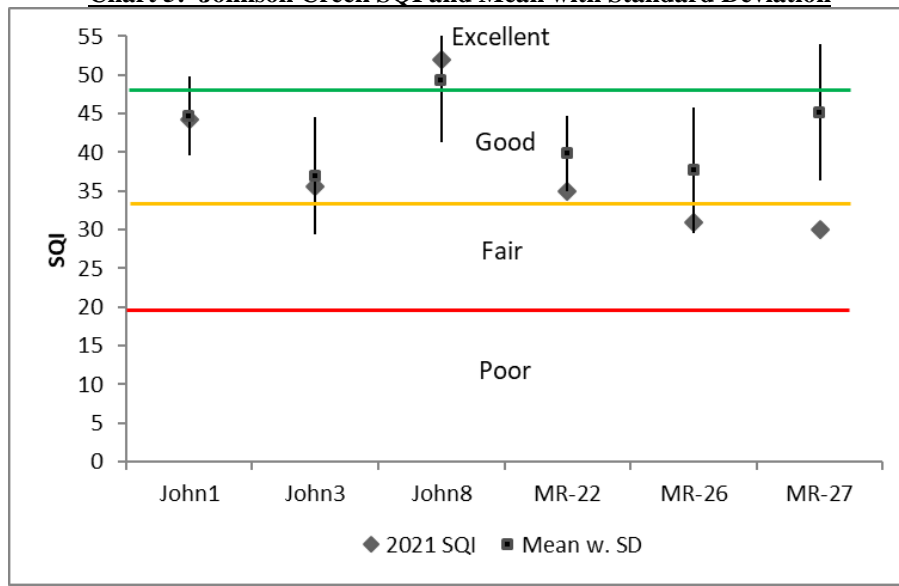


Chart 6: Walled Lake Branch SQI and Mean with Standard Deviation

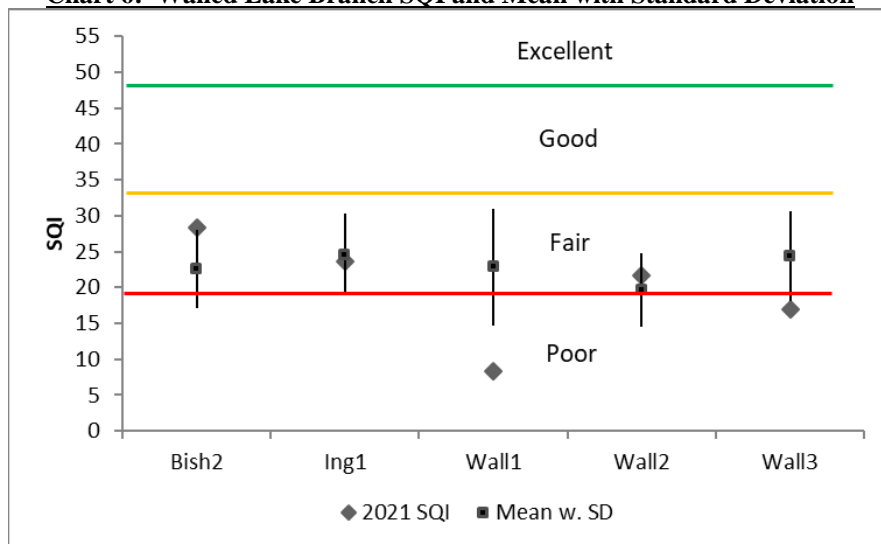


Chart 7: Tonquish Creek SQI and Mean with Standard Deviation

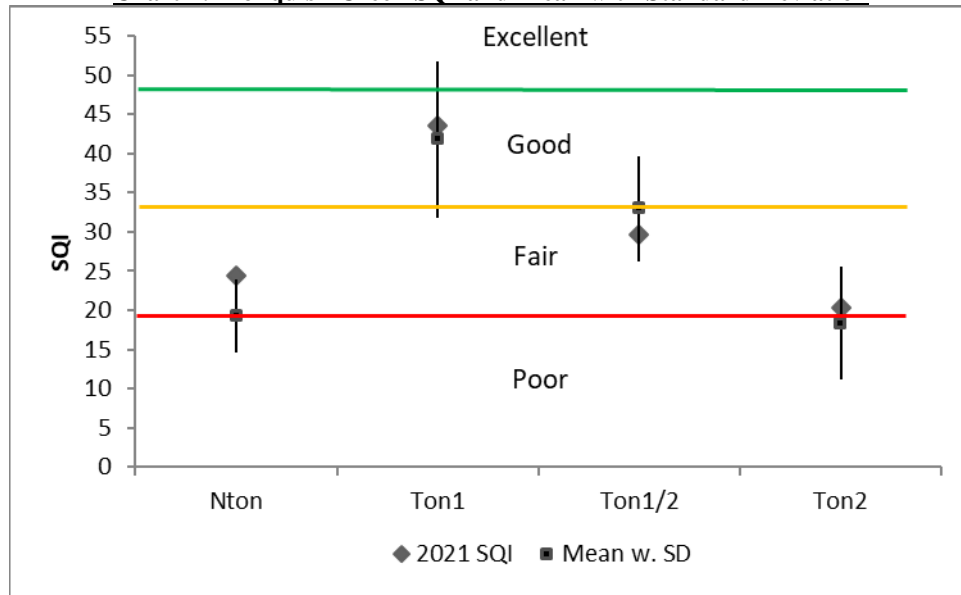
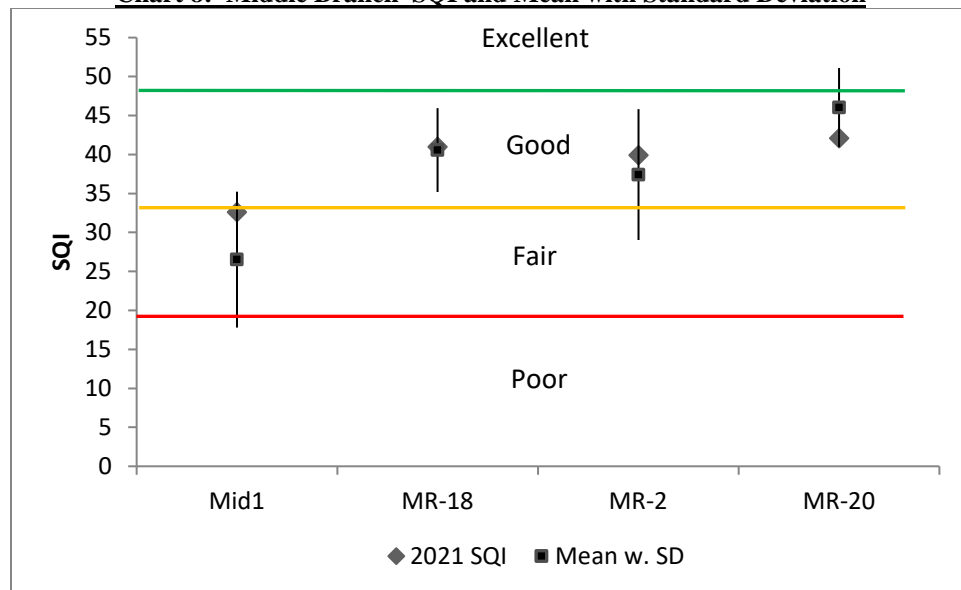


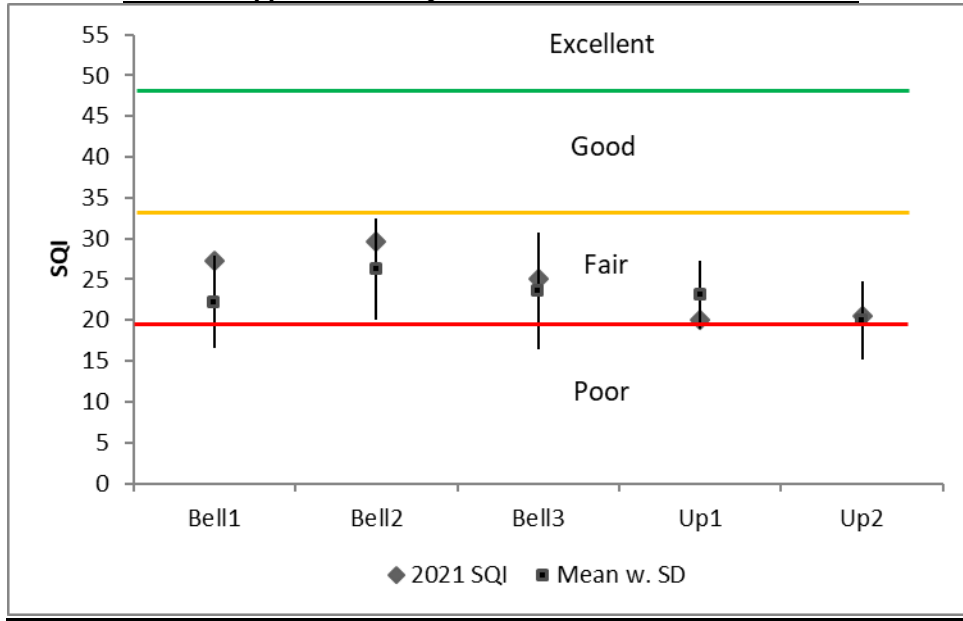
Chart 8: Middle Branch SQI and Mean with Standard Deviation



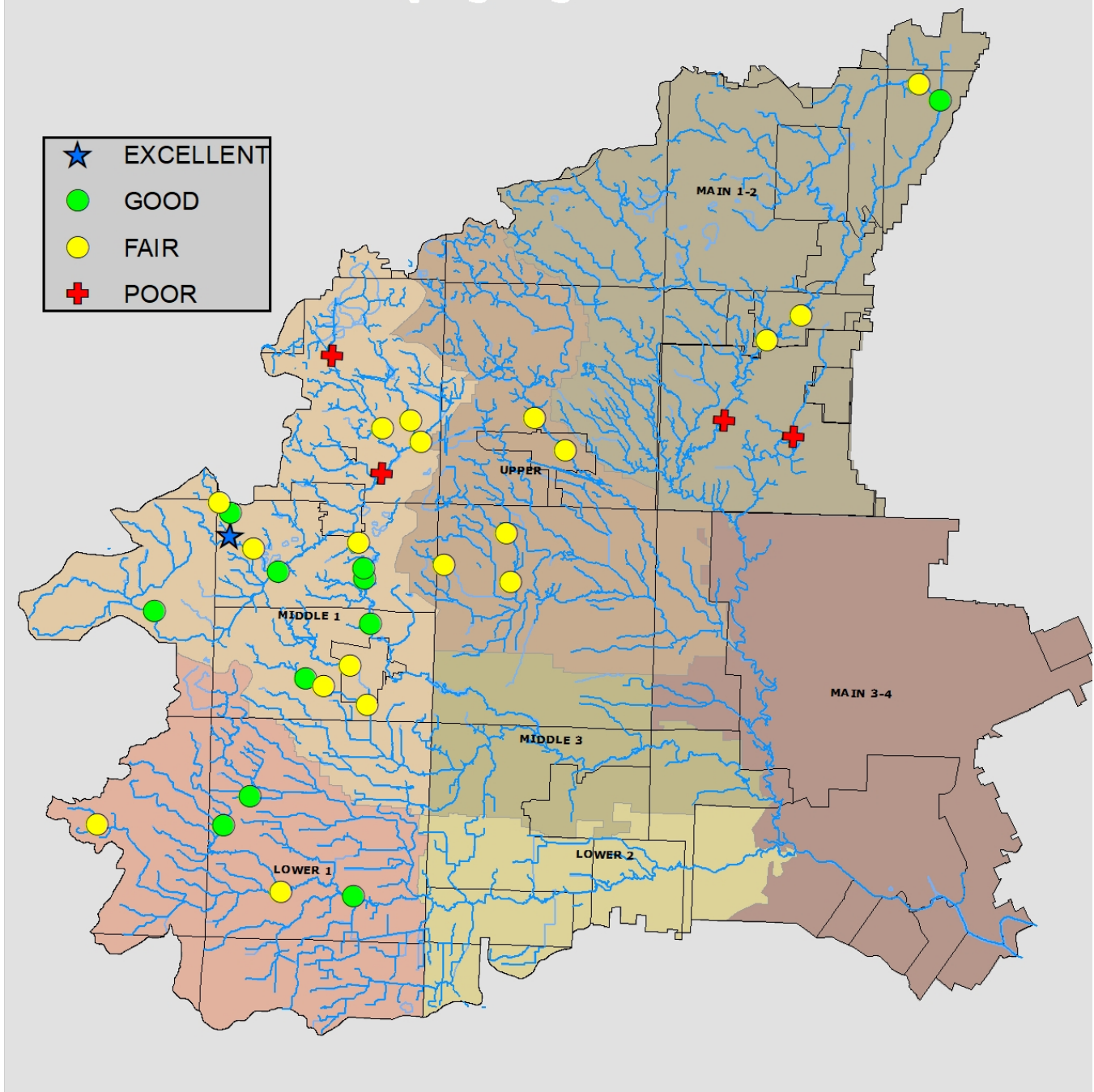
Upper Branch

Five Upper branch sites were sampled this spring, including the Bell Branch. The average score for the Upper branch was FAIR (25) and all scored FAIR. The number of taxa ranged from 8-14 and EPT 0-1. No sensitive families were found. The Upper Subwatershed did not show any overall trend though the slope was negative (Table 1, graphs p. 15). In comparison to past data, all five sites were within a standard deviation of the mean (Chart 9). Chloride levels were at harmful levels for all Upper sites (358-610).

Chart 9: Upper Branch SQI with Mean and Standard Deviation



2021 Spring Bug Hunt



2021 Spring Chloride Levels

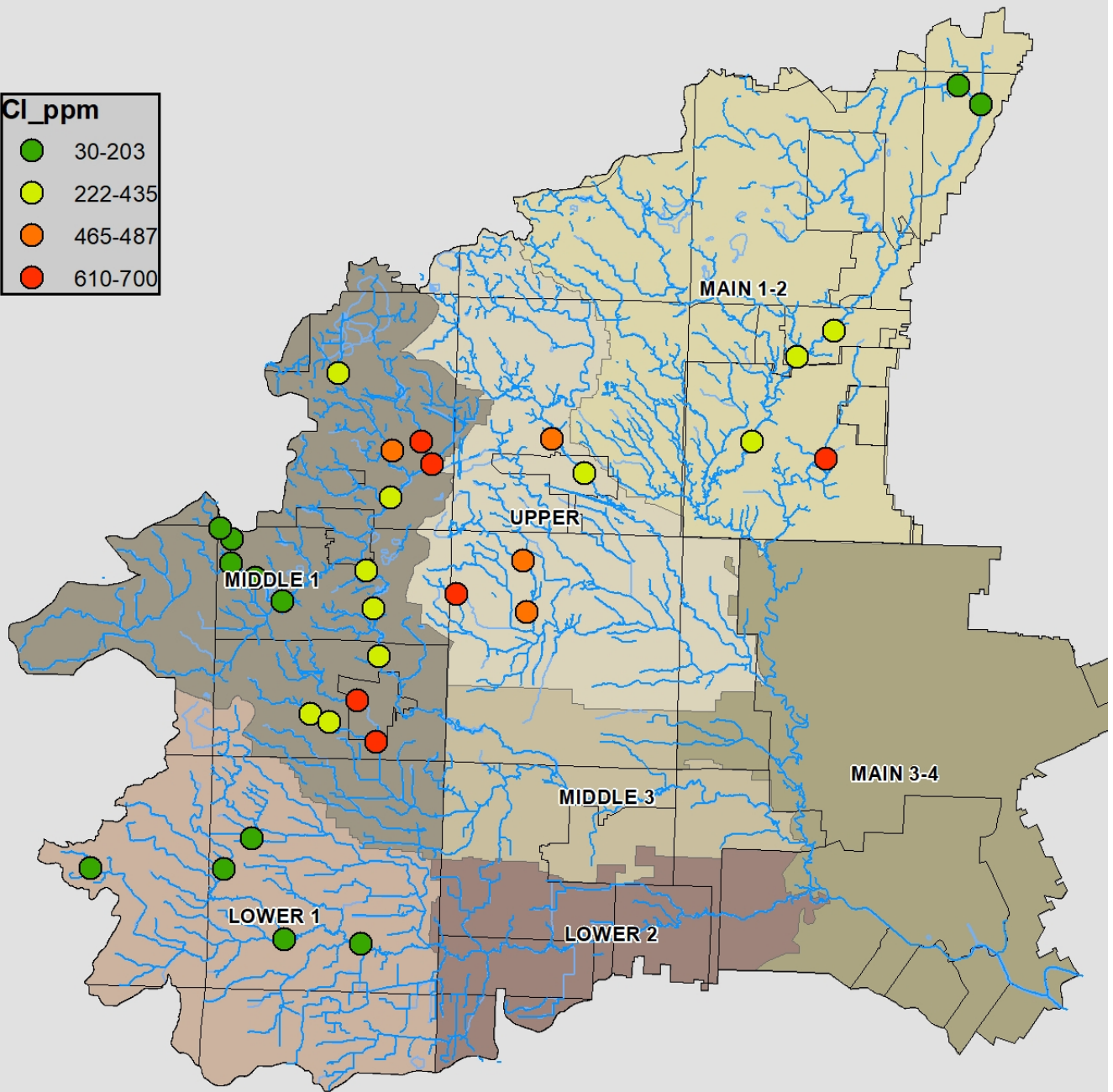
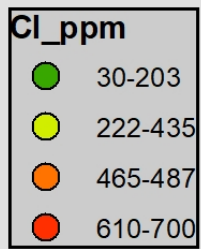


Table 3: Sites, Scores and Chloride										
Stream Name	FIELDID	City or Township	SQI	score	taxa	insect taxa	EPT	sensitive families found	sensitive families	Cl ppm
Lower Branch										
Fellows Creek	Fel2	Canton Twp	39	GOOD	15	10	2	0		91
Fowler Creek	Fowl1	Superior Twp	20	FAIR	9	7	2	1	Rhyacophilidae	30
Fowler Creek	Fowl2	Canton Twp	24	FAIR	8	4	2	0		76
Lower Rouge	Low2	Canton Twp	42	GOOD	16	12	6	2	Perlodidae, Rhyacophilidae	46
Lower Rouge	LR-12	Canton Twp	43	GOOD	15	10	3	0		56
Main Branch										
Evans Creek	Evan2	Southfield	12	POOR	6	3	1	0		700
Nottingham Creek	Nott	Beverly Hills	22	FAIR	9	4	1	0		237
Sprague Creek	Sprag	Troy	32	FAIR	14	10	2	0		203
Main Rouge	Main1	Troy	36	GOOD	13	8	3	0		203
Main Rouge	Main5	Beverly Hills	29	FAIR	10	6	2	0		293
Main Rouge	Main6	Southfield	18	POOR	8	4	2	0		290
Middle Branch										
Johnson Creek	John1	Salem Twp	44	GOOD	17	12	5	2	Rhyacophilidae, Perlodidae	
Johnson Creek	John3	Northville Twp	36	GOOD	16	11	4	1	Leptophlebiidae	97
Johnson Creek	John8	Northville Twp	52	EXCELLENT	21	15	6	2	Nemouridae, Perlodidae	91
Johnson Creek	MR-22	Northville Twp	35	GOOD	14	11	4	2	Perlodidae, Leptophlebiidae	67
Johnson Creek	MR-26	Northville Twp	31	FAIR	14	7	2	1	Leptophlebiidae	30
Johnson Creek	MR-27	Northville	30	FAIR	12	9	3	0		129
Tonquish Creek	Ton1	Plymouth Twp	44	GOOD	16	11	4	0		222
Tonquish Creek	Ton1/2	Plymouth Twp	30	FAIR	11	8	3	0		222
Tonquish Creek	Ton2	Plymouth Twp	20	FAIR	8	5	2	0		700
Tonquish Creek	Nton	Plymouth	24	FAIR	8	5	2	0		646
Bishop Creek	Bish2	Novi	28	FAIR	10	7	1	1	Corydalidae	700
Ingersoll Creek	Ing1	Novi	24	FAIR	10	5	0	0		610
Walled Lk Drainage	Wall1	Novi	8	POOR	4	2	0	0		240
Walled Lk Drainage	Wall2	Novi	22	FAIR	10	5	1	0		465
Walled Lk Drainage	Wall3	Novi	17	POOR	7	4	1	0		435
Middle Rouge	Mid1	Northville Twp	33	FAIR	13	8	1	0		222
Middle Rouge	MR-20	Northville Twp	42	GOOD	19	13	4	0		
Middle Rouge	MR-2	Northville Twp	40	GOOD	16	10	4	0		293
Middle Rouge	MR-18	Plymouth Twp	41	GOOD	17	10	5	1	Lepidostomatidae	273
Upper Branch										
Bell Branch	Bell1	Livonia	27	FAIR	12	7	1	0		487
Bell Branch	Bell2	Livonia	30	FAIR	14	8	0	0		610
Bell Branch	Bell3	Livonia	25	FAIR	10	6	1	0		465
Upper Rouge	Up1	Farmington Hills	20	FAIR	8	6	1	0		482
Upper Rouge	Up2	Farmington	21	FAIR	8	6	1	0		358

Thank you to all the **volunteers, Wayne County** and **Sue Thompson** for sampling additional sites, identifying difficult specimens and doing the trend analysis, **Bruce McCulloch** for data analysis and report review, **Deirdre Devlin** and **Schoolcraft College** students for sampling one site.

This program is supported by the Erb Family Foundation, Washtenaw County, the City of Southfield, the City of Troy, the Village of Beverly Hills, the City of Plymouth, Plymouth Township, the City of Novi, the City of Livonia and the City of Farmington.

Fall Bug Hunt

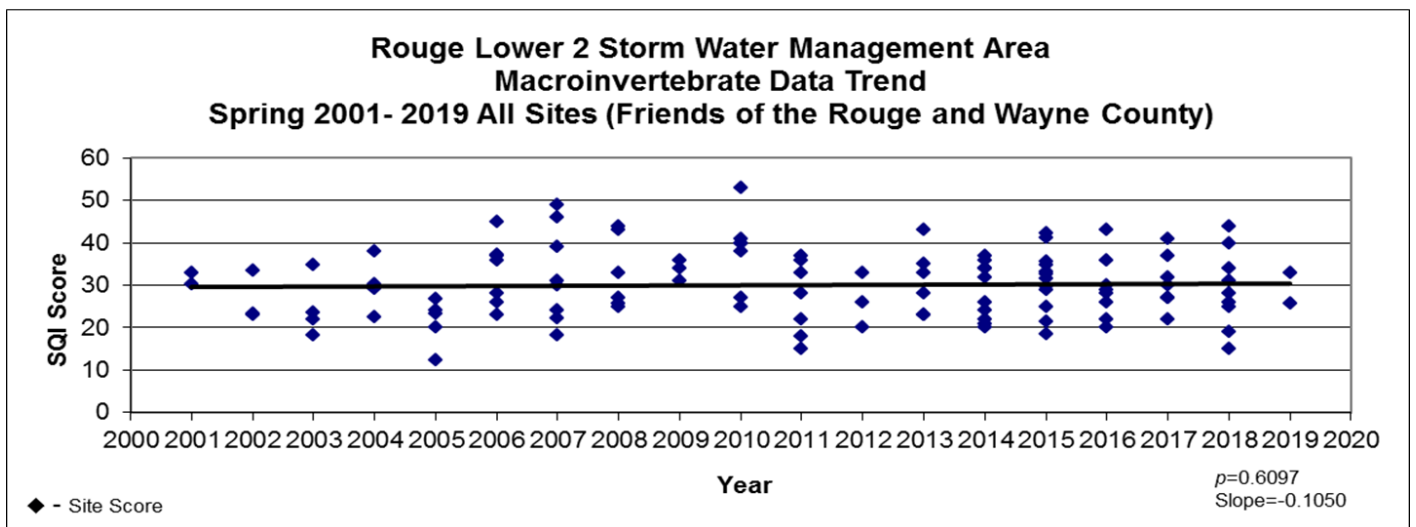
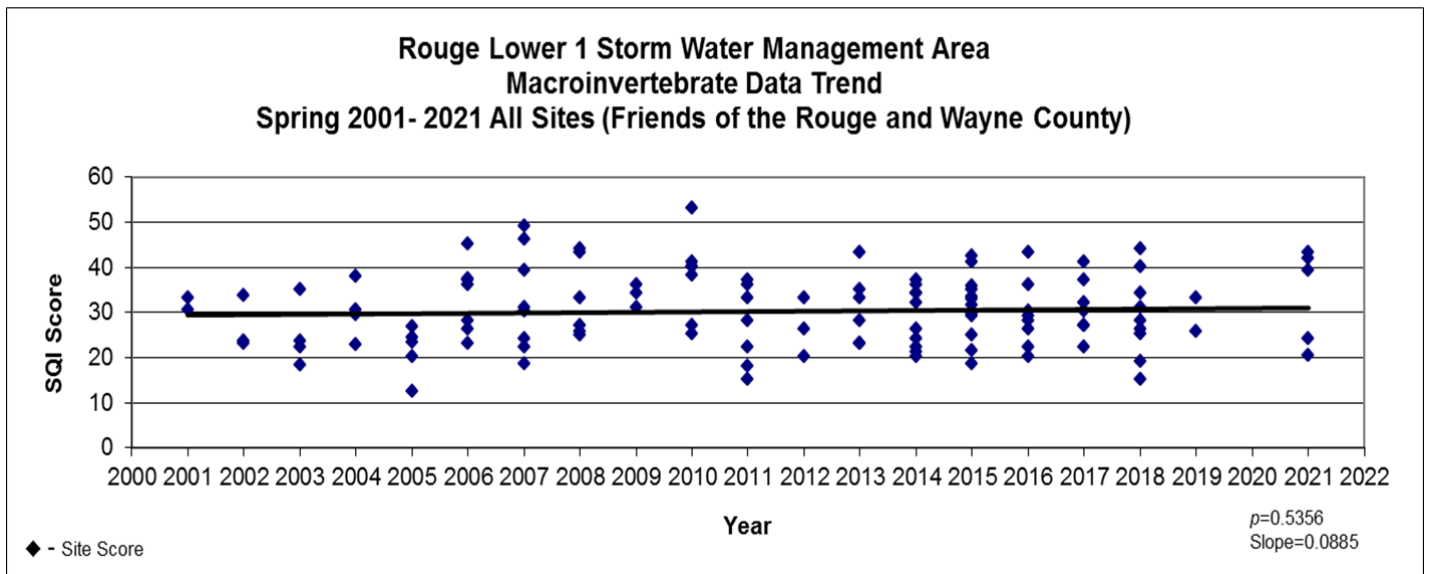
Oct. 16, 2021 10 am-4pm

Sign up online today (deadline Oct. 1, 2021 at www.therouge.org)

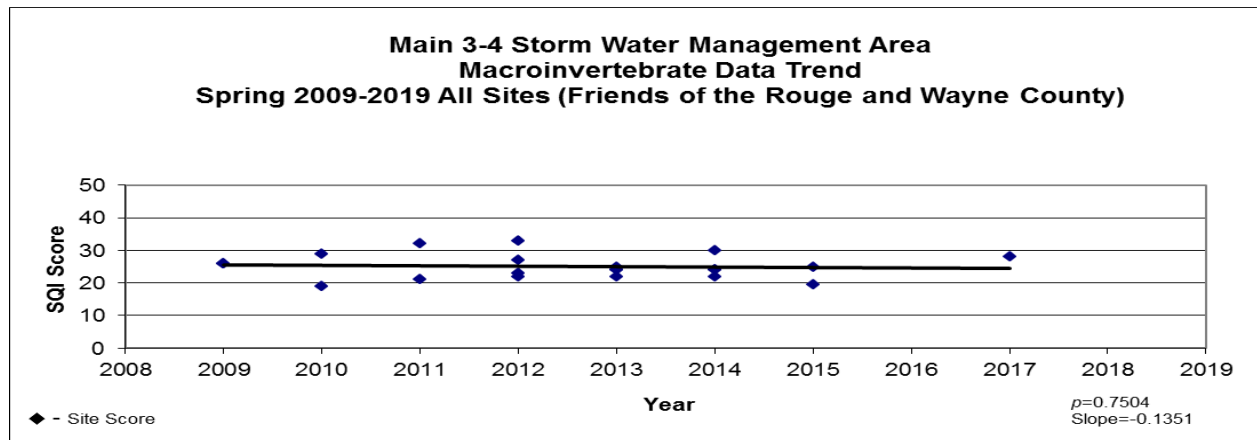
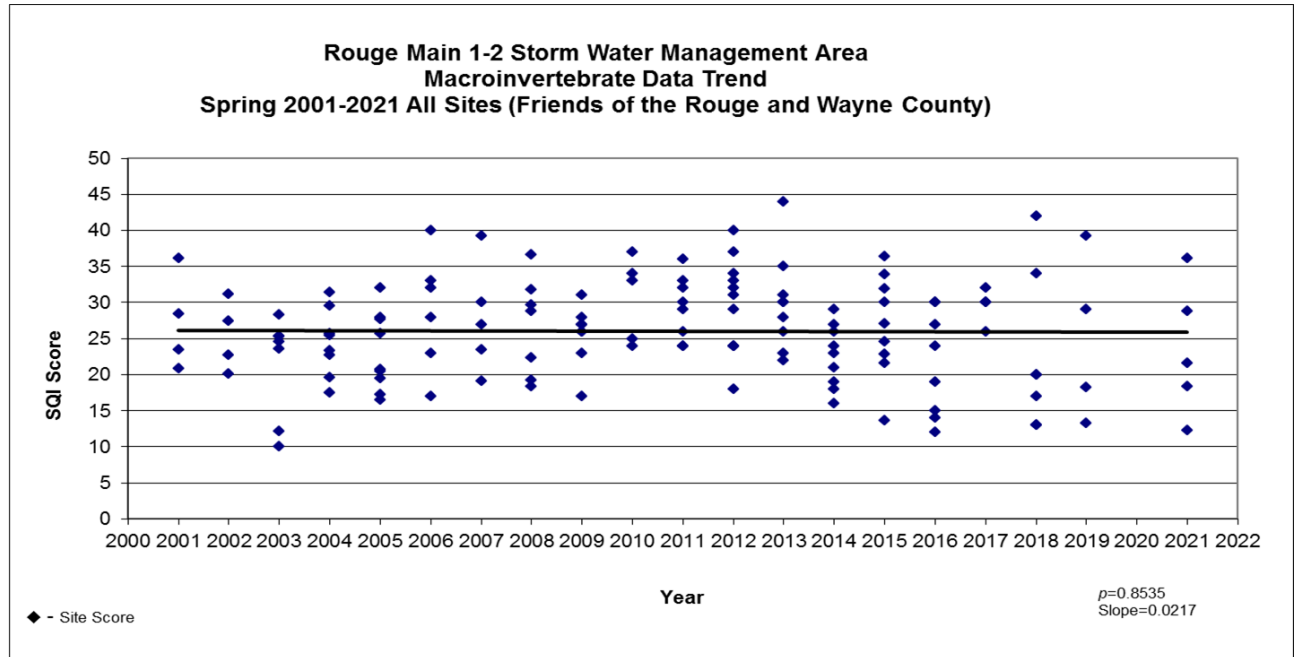
Team Leader Training – Sat. Oct. 2, 2021 9am-3pm (must have participated in a previous event)

Trend Graphs

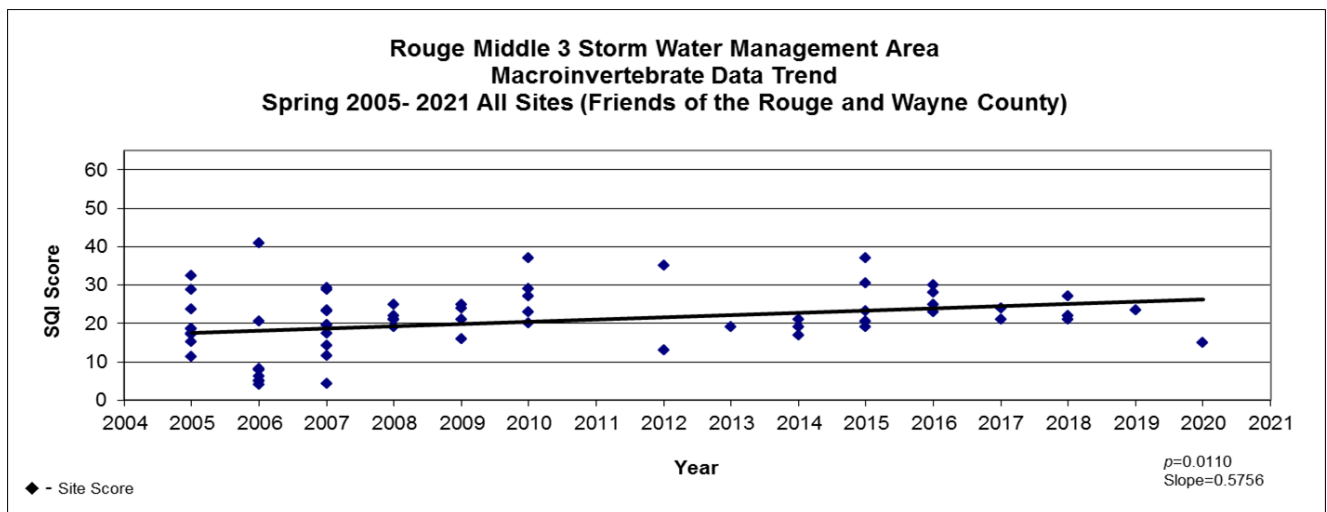
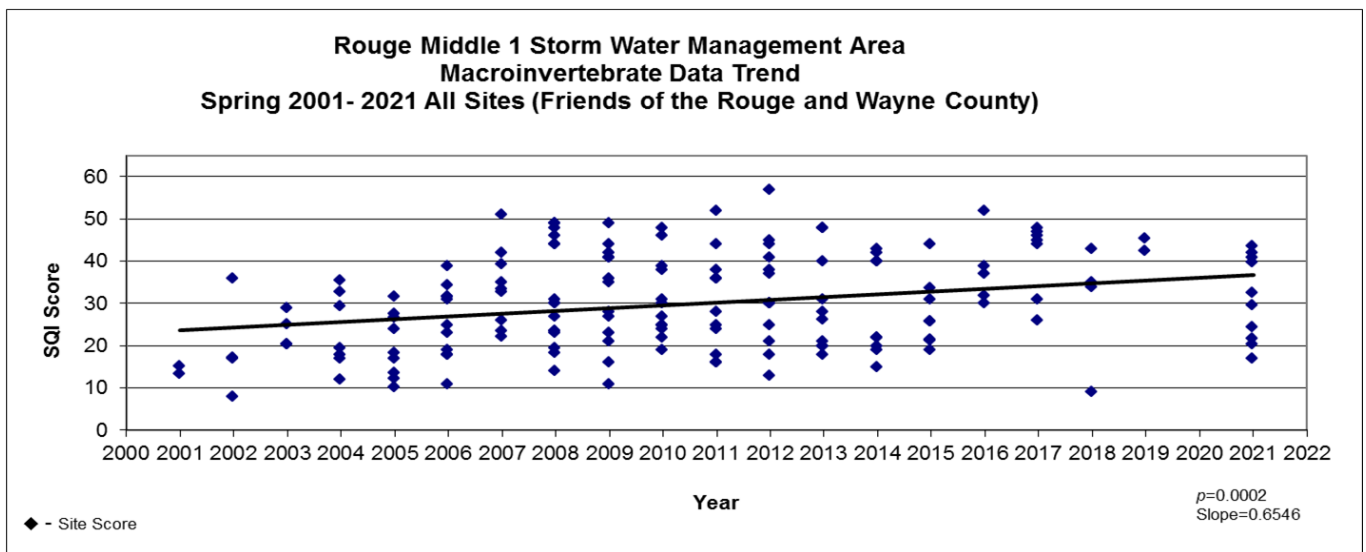
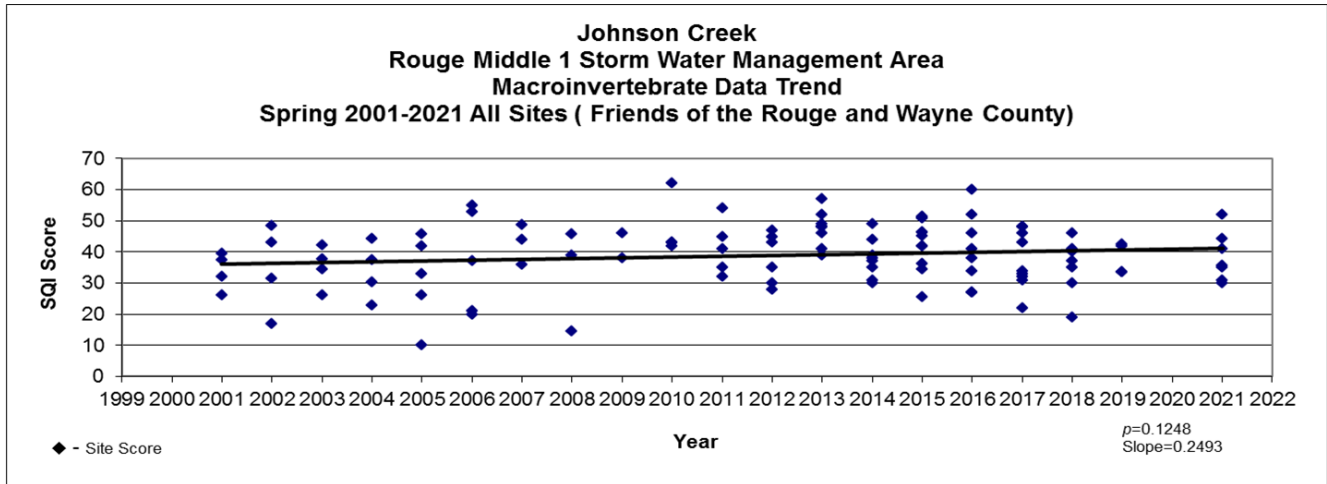
Lower Branch



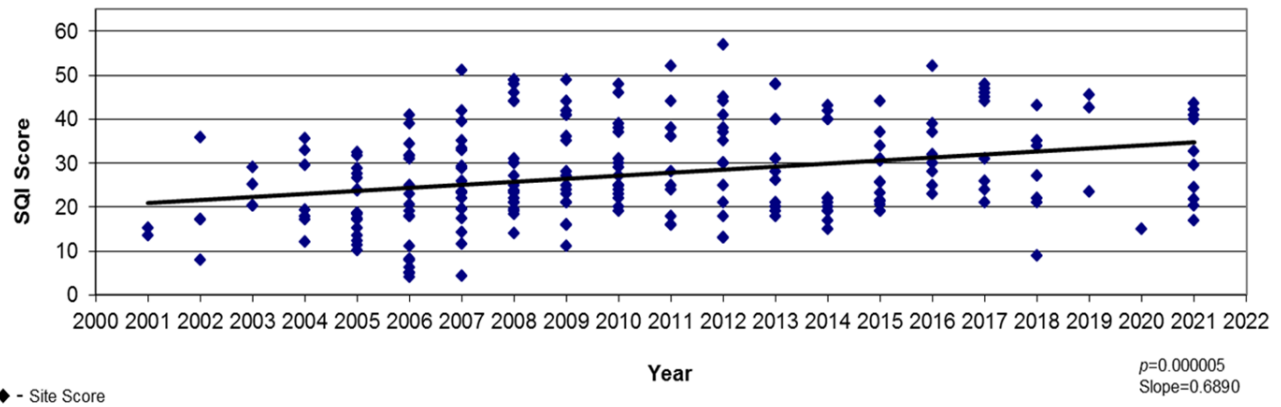
Main Branch



Middle Branch

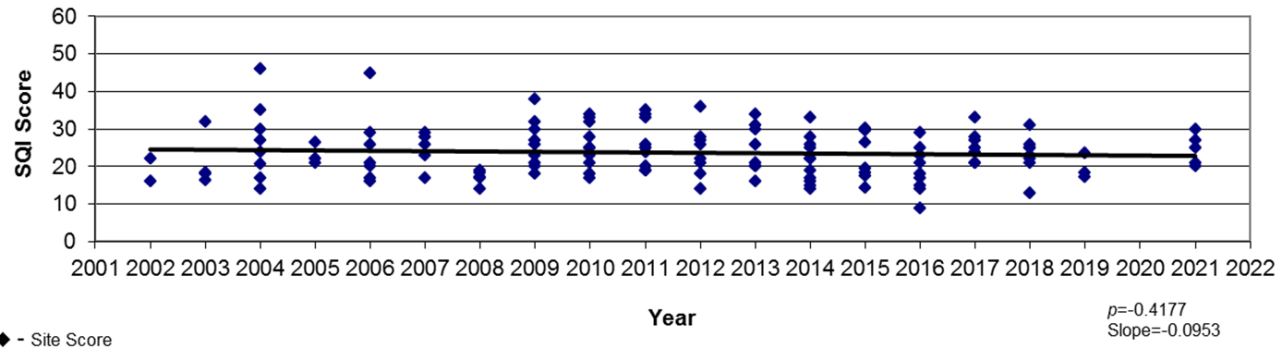


**Rouge Middle 1 and 3 Storm Water Management Area
Macroinvertebrate Data Trend
Spring 2001- 2021 All Sites (Friends of the Rouge and Wayne County)**



Upper Branch

**Upper Rouge Storm Water Management Area
Macroinvertebrate Data Trend
Spring 2002- 2021 All Sites (Friends of the Rouge and Wayne County)**



2020 Winter Stonefly Search Report



Rouge River Watershed 2020 Winter Stonefly Search

www.therouge.org

Sixty-five people participated in Friends of the Rouge's 2020 Winter Stonefly Search on January 25. Unlike past years with volunteers using axes and ice picks to open up the ice, this year temperatures were in the mid 30s and it rained. The half inch of rain that fell the day before combined with snowmelt was problematic, forcing us to move to upstream sites to avoid dangerous high water. The event was held at the Plymouth Cultural Center, a few blocks away from the Friends of the Rouge office. Daisy Lovain ran registration once again. Participating teams included one from Wayne State University led by Molly McKuen.

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.

For the second year in a row, we held a Stonefly Refresher on January 11 in our Bosch Laboratory and 16 people attended. Thank you to Sue Thompson for co-leading it once again. Team Leaders and regular volunteers enjoyed learning more about the bugs and how to tell them apart.

This report contains data for a total of 34 sites. During the Stonefly Search, twelve volunteer teams sampled 23 sites. An additional five sites were sampled by Wayne County Department of Public Services Water Quality Management Division and five sites on Johnson Creek by Sue Thompson.

The good news is that we found winter stoneflies for the first time at four sites: MR-26, Low3, Fowl4 and Min4. Stoneflies were found sixteen of the thirty four sites (47%) (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 (Min4). 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 FOTR Biological Monitoring Intern Michael Szlinis and sorted by participants during the Stonefly Refresher.

Lower Branch

The Lower Branch had the best showing for stoneflies: eight of the twelve sites (67%) had stoneflies. Three were in Fellows Creek, three were in Fowler Creek and two sites were on the main branch of the Lower nears its headwaters.

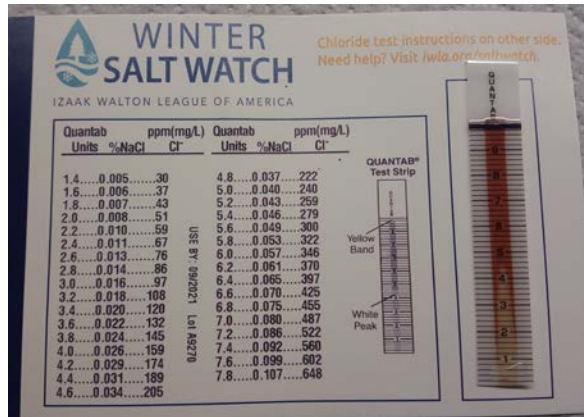
Middle Branch

On the Middle Branch nineteen sites were sampled: eleven on Johnson Creek, four on Tonquish Creek, two on Willow Creek, and two on the Middle branch. Seven (37%) of the sites had stoneflies and all were on the Johnson Creek. Of the eleven Johnson Creek sites, four did not have stoneflies. All sites had slender winter stoneflies (Capnids) and one site (John8) also had Perlodids.

Upper Branch

Three Upper Branch sites were sampled and stoneflies were found at one site (33%). This was Min4, a new site where stoneflies had been found in the fall before. This site is the farthest upstream on Minnow Pond Creek that we have found winter stoneflies (Capnids).

Winter Salt Watch



This year, our teams participated in the Winter Salt Watch program at the request of the Izaak Walton League. Each team used test strips to test each site for road salt. They then used an app called Water Reporter to upload a photo of their findings (see example to the left). The program is being undertaken to raise awareness about the effect of road salt on our streams.

While most of the Lower sites and Johnson Creek were fairly low (see Table 1), the Tonquish Creek had extremely high levels including one deemed "off the charts" at 800 ppm. This was on a tributary

to the Tonquish Creek near M-14. Minnow Pond and Seeley Creek in the Upper also had elevated readings (322 & 455 ppm). We will be taking a closer look at these levels. Anyone interested in taking their own readings this winter is encouraged to request their own kit at <https://www.iwla.org/water/stream-monitoring/winter-salt-watch>.

Thank you to all the volunteers, Team Leaders, Registration and set-up volunteers, Wayne County and Sue Thompson for additional sampling. The Winter Stonefly Search is part of the Friends of the Rouge long term volunteer monitoring program and is funded through the Alliance of Rouge Communities, Washtenaw County Water Resources Commission, the Erb Family Foundation and individual donations.

Spring Bug Hunt: Sat. April 18 9am-4 pm Plymouth Cultural Center, 525 Farmer Street, Plymouth, MI

Register by 4/3 at www.therouge.org

Team Leader Training April 4 (must have previously attended an event)

www.therouge.org (register online)

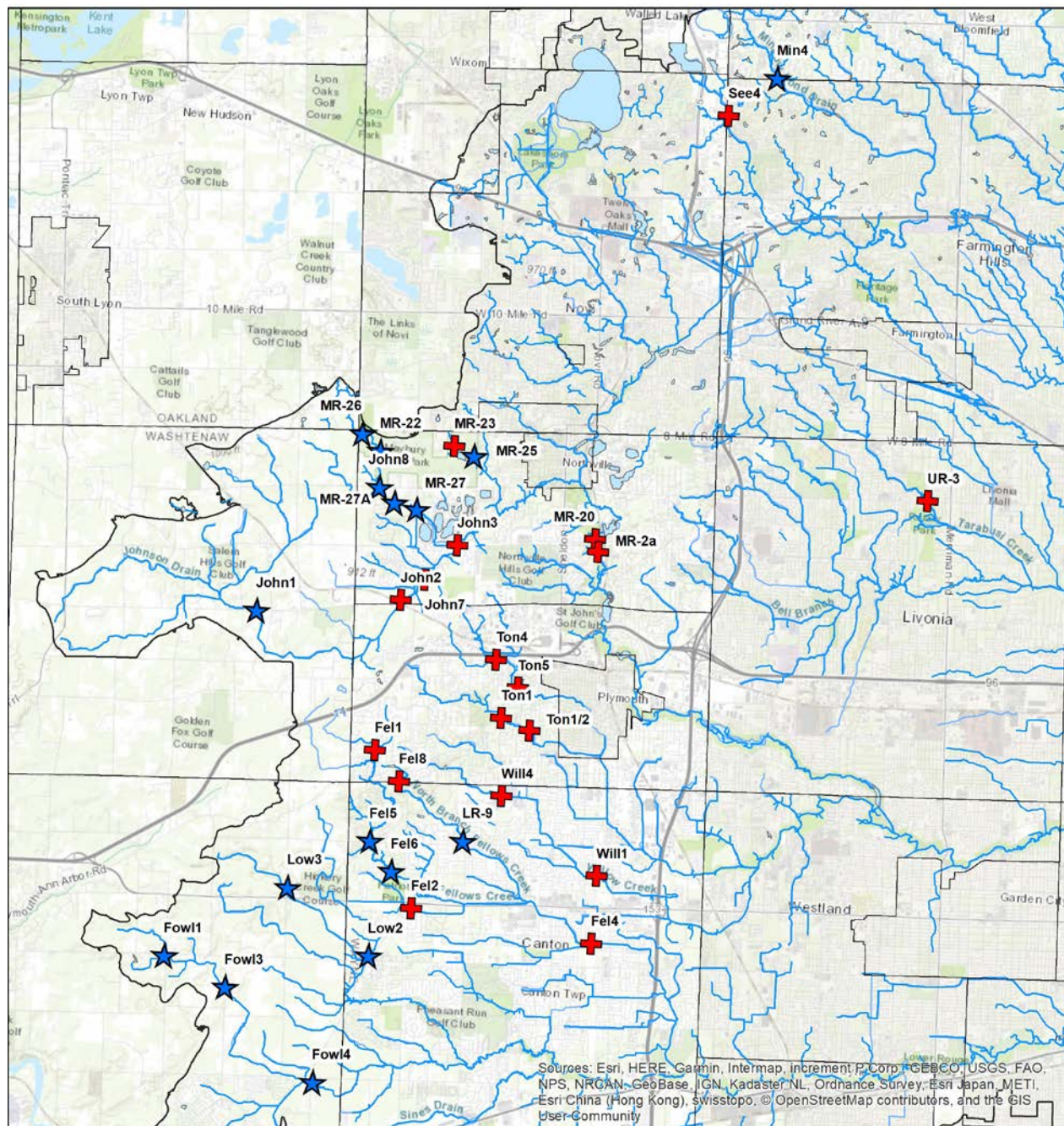
(724) 927-4904 spetrella@therouge.org

Coordinated by Friends of the Rouge and funded by the Alliance of Rouge Communities, the Erb Family Foundation, Washtenaw County, and contributions from participants and supporters. Additional data collection by Wayne County.

From top left: Team Leader Josh Eisenman finds a loose drain pipe at Min4, blacknose dace with unusual pattern from Tonquish Creek, Team 5 at Fellows Creek, Mike Flowers and Michael Szlinis sorting at Waterford Bend, Team 6 at Fowler Creek, Team Leaders gathering for instructions at Plymouth Cultural Center.



2020 Stonefly Search Results (blue stars = present, red crosses = absent)



Sites where Stoneflies Are Found (2002-2020)

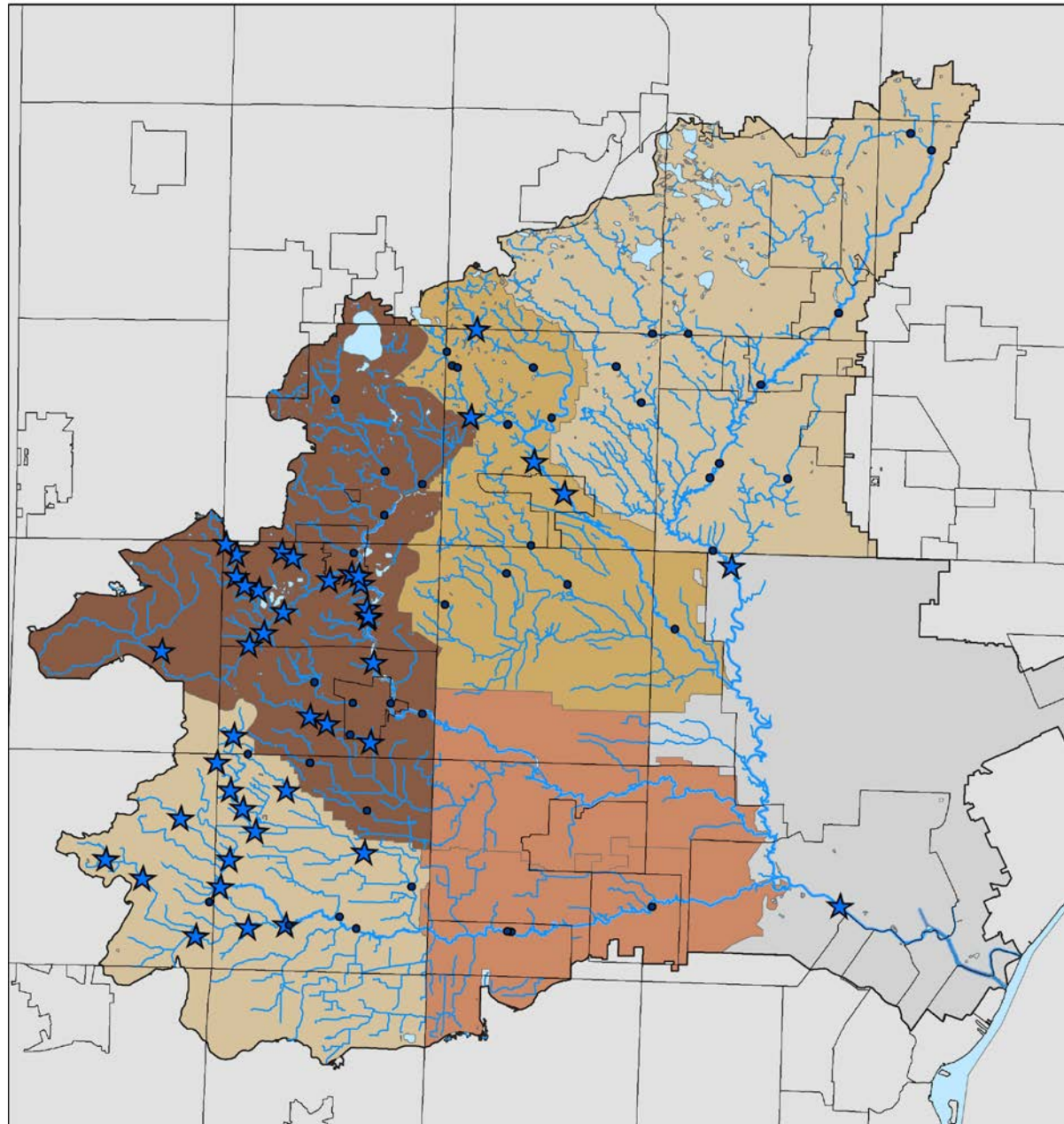
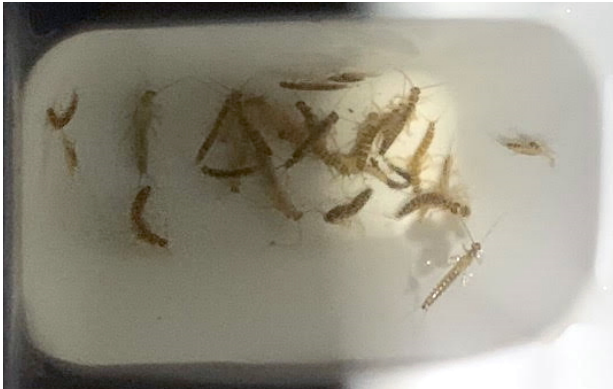


Table 1: 2020 Stonefly Search Results

BRANCH	FIELDID	Stream Name	Site Description	Collector	ST2020?	Family	Salt reading	Salt, ppm
Lower	Fel1	Fellows Creek	Top of Hill Ct	1	N		2.2	59
Lower	Fel2	Fellows Creek	Vintage Valley	5	N		2.8	86
Lower	Fel4	Fellows Creek	Flodin Pk	WC	N			
Lower	Fel5	Fellows Creek	Warren Ridge	1	Y	Capnids	2.0	51
Lower	Fel6	Fellows Creek	Hanford	5	Y	Capnids		
Lower	Fel8	Fellows Creek	Creekwood Drive	12	N		3.6	132
Lower	LR-9	Fellows Creek	Fellows Beck Warren	12	Y	Capnids	2.8	86
Lower	Fowl1	Fowler Creek	Prospect	6	Y	Capnids	1.0	26
Lower	Fowl3	Fowler Creek	Harris	6	Y	Capnids	1.4	30
Lower	Fowl4	Fowler Creek	Ridge Rd S of Geddes	9	Y	Capnids	2.0	51
Lower	Low2	Lower Rouge	Cherry Hill	3	Y	Capnids	1.6	37
Lower	Low3	Lower Rouge	Gotfredson	3	Y	Capnids	1.1	28
Middle	John1	Johnson Creek	5M Salem	7	Y	Capnids	1.6	37
Middle	John2	Johnson Creek	5M NV	7	N		1.4	30
Middle	John3	Johnson Creek	6M NV	8	N		2.2	59
Middle	John7	Johnson Creek	Arcadia	8	N		2.0	51
Middle	John8	Johnson Creek	Maybury Angell	TR-ST	Y	Capnids, Perlodids	1.0	26
Middle	MR-22	Johnson Creek	Maybury south	ST	Y	Capnids		
Middle	MR-23	Johnson Creek	Maybury north	ST	N			
Middle	MR-25	Johnson Creek	Maybury East	ST	Y	Capnids		
Middle	MR-26	Johnson Creek	Napier Rd	ST	Y	Capnids		
Middle	MR-27	Johnson Creek	Ridge	WC	Y	Capnids		
Middle	MR-27A	Johnson Creek	Florissant Dr.	ST	Y	Capnids		
Middle	MR-20	Middle Rouge	Waterford Bd	WC	N			
Middle	MR-2a	Middle Rouge	Reservoir Rd W	WC	N			
Middle	Ton1	Tonquish Creek	Plym Twp Pk	2	N		4.2	174
Middle	Ton1/2	Tonquish Creek	Canton Ctr Rd	2	N		4.2	174
Middle	Ton4	Tonquish Creek	Burning Tree Lane	10	N		8.0	800
Middle	Ton5	Tonquish Creek	Beacon Hill Dr	10	N		7.8	648
Middle	Will1	Willow Creek	Willow Barchester Pk	11	N		4.9	231
Middle	Will4	Willow Creek	Plymouth Canton HS	11	N		3.0	97
Upper	Min4	Minnow Pond	14 Mile	4	Y	Capnids	5.8	322
Upper	See4	Seeley Creek	Haggerty Rd	4	N		6.8	455
Upper	UR-3	Tarabusi Creek	Tara 7 M	WC	N			

2021 Winter Stonefly Search Report

Seventy-five people participated in Friends of the Rouge's 2021 Winter Stonefly Search on January 23 in eleven teams that sampled 20 sites. Due to the pandemic, Team Leaders met their volunteers at the sites and all volunteers completed health screenings, wore masks and practiced social distancing. To prepare volunteers for the event, we held a Stonefly Refresher on January 11. This former lab class was held



<https://youtu.be/Y3GZH3QJJ0>.

as a virtual Zoom webinar with 36 attendees. While we were disappointed that we could not offer the opportunity for participants to examine live materials and use microscopes, more people could participate in the virtual class than our small lab could accommodate in person. Thank you to Sue Thompson for co-presenting and adapting to virtual. The majority of the attendees were new to the search and had lots of good questions. We recorded the webinar and it is available here:

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 25 sites. Eleven volunteer teams sampled 20 sites on January 23 during the Stonefly Search. An additional four sites were sampled by Sue Thompson (Wayne County Department of Public Services) and additional volunteers and FOTR staff. Sue Thompson sampled one additional site in Maybury State Park (MR-22).

Stoneflies were found at ten of the twenty five-sites (40%) (map and Table 1) on the Middle, Lower and Upper branches. 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. Stoneflies were rare at most of sites where they were found with the exception of three Johnson Creek sites.

Lower Branch

On the Lower Branch, four sites were sampled on Fellows Creek, two on Fowler Creek and one on the main branch of the Lower (photo at right shows the Fowler Creek team). Thick ice prevented one team from sampling two sites on the main Lower branch so they sampled a site further downstream. The Lower had stoneflies at two of the seven sites (29%). One site with stoneflies was in Fellows Creek and the other in Fowler Creek.





Middle Branch

On the Middle Branch, thirteen sites were sampled: eight on Johnson Creek, two on Tonquish Creek, and three on the Middle branch (photo at left showing Team Leader Steve Weis sampling the Middle branch).

Six (46%) of the sites had stoneflies and five of those sites were on the Johnson Creek and one on the main Middle Branch. All sites had slender winter stoneflies (Capnids) and one site (John8) also had Perlodids. Three of the Johnson Creek sites with stoneflies had healthy populations with over 11 individuals (John3, John8 and MR-22). Stoneflies have not been found at MR-18, the Middle branch site, since 2010.

Upper Branch

Five Upper Branch sites were sampled including one site on Minnow Pond Creek, one site on Seeley Creek and two on the main Upper branch (photo at right shows Upper Branch team). Stoneflies were found at two sites (40%) - Min4, and Up2. Both sites had slender winter stoneflies (Capnids). Stoneflies are very rarely found in the Upper Branch. Min4 is the first site on any tributary of the Upper to have stoneflies and this is the second year in a row for stoneflies to be found there and at Up2.



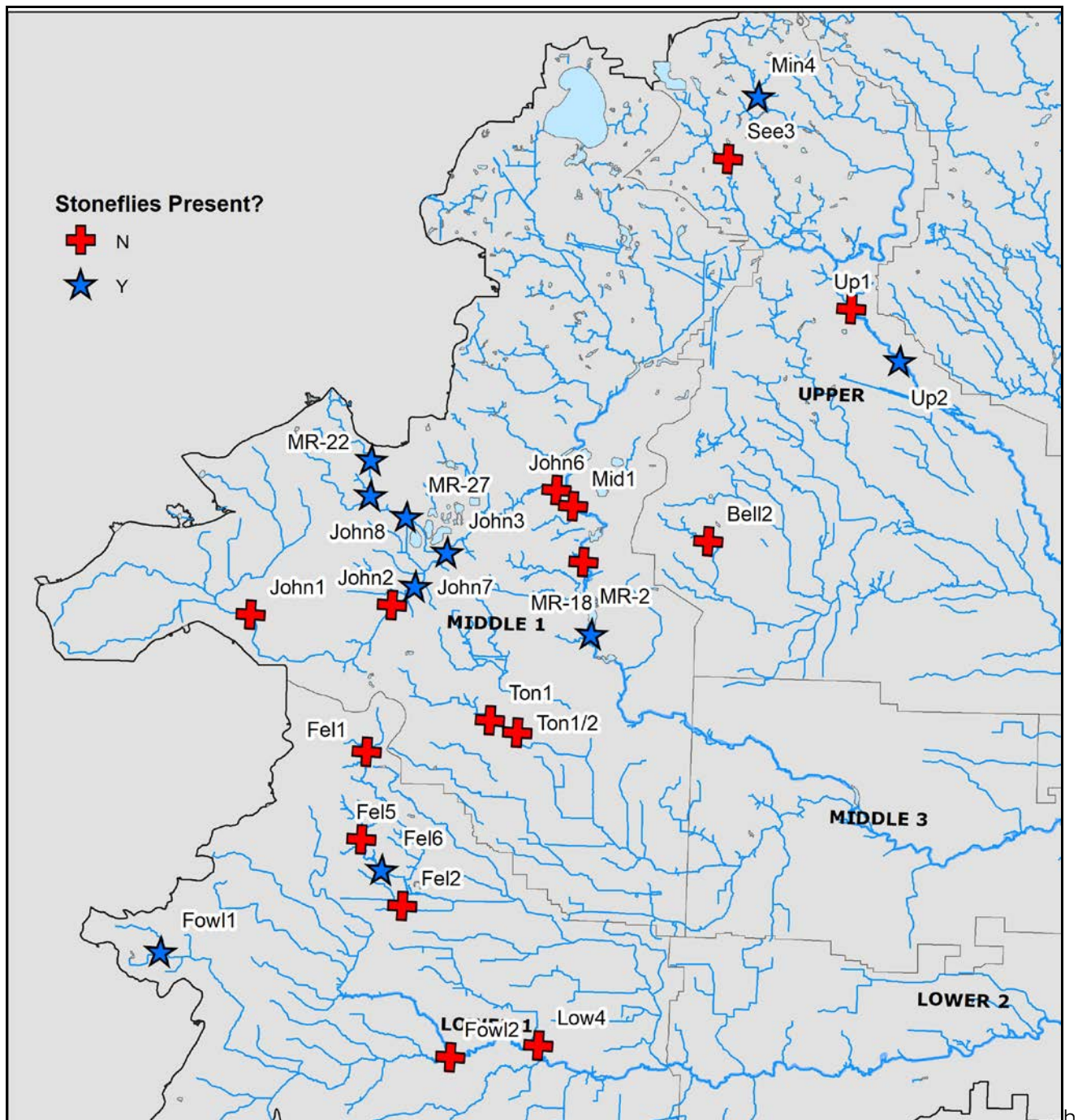
For the second year, our teams participated in the Izaak Walton League's Winter Salt Watch program and tested each stonefly site for chloride to look for the presence of road salt. Road salt helps to keep us safe but can cause serious damage to water quality. According to the Environmental Protection Agency, in freshwater systems, chloride levels above 230 ppm kill fish slowly and levels above 860 ppm kill fish quickly. More information on the Winter Salt Watch program can be found here: <https://www.iwla.org/water/stream-monitoring/winter-salt-watch>.

Most of our sites were below 230 ppm with the exception of all five Upper branch sites and the Middle branch. In comparison to 2020, all sites that were sampled in 2020 had higher levels of chloride in 2021 when compared to 2021 values. January 2021 had very little snow with less than a quarter inch (0.22 inch) falling within the week before the event while in 2020 there was ¾ of an

inch of snow the week before and rain falling the day of and day before the search, likely diluting any runoff. We are planning to take baseline chloride measurements in the fall.

Thank you to all the volunteers, Team Leaders, and Wayne County and Sue Thompson for additional sampling. The Winter Stonefly Search is part of the Friends of the Rouge long term volunteer monitoring program and is funded through the Alliance of Rouge Communities, Washtenaw County Water Resources Commission, the Erb Family Foundation and individual donations.

Map 1: 2021 Stonefly Search Results



Map 2: 2021 Chloride Readings

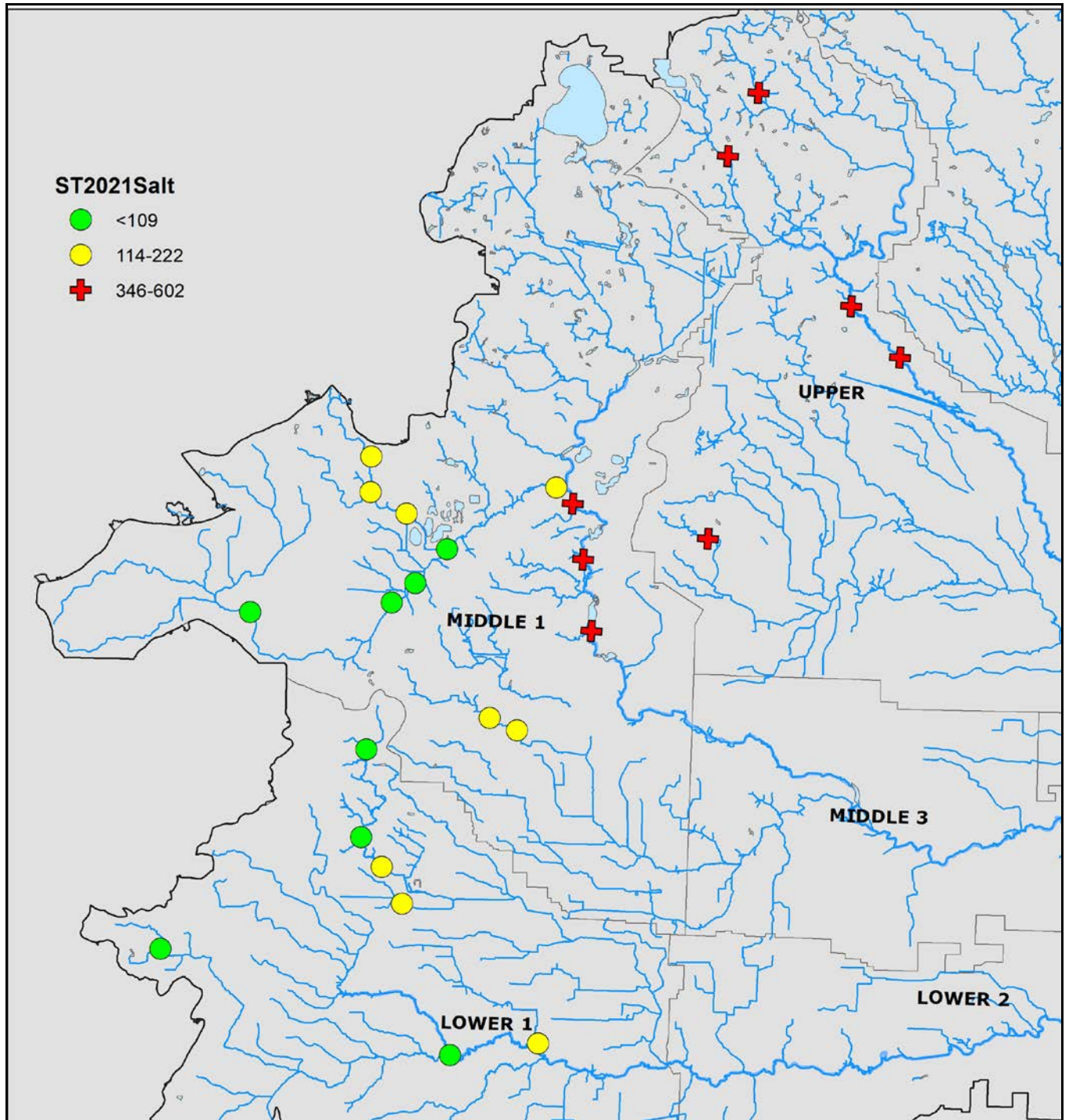


Table 1: Stonefly and Chloride Findings								
Branch	Stream Name	FIELDID	Site Name	Stoneflies?	date	Family	2021 Salt, ppm	2020 Salt, ppm
Lower	Fellows Creek	Fel1	Top of Hill Ct	N	1/23/2021		86	56
Lower	Fellows Creek	Fel2	Vintage Valley	N	1/23/2021		189	91
Lower	Fellows Creek	Fel5	Warren Ridge	N	1/23/2021		43	46
Lower	Fellows Creek	Fel6	Hanford	Y	1/23/2021	Capnids	126	
Lower	Fowler Creek	Fowl1	Prospect	Y	1/23/2021	Capnids	108	20
Lower	Fowler Creek	Fowl2	Fowler Beck	N	1/23/2021		86	
Lower	Lower Rouge	Low4	Sheldon Rd	N	1/23/2021		145	
Middle	Johnson Creek	John8	Maybury Angell	Y	1/13/2021	Capnids, Perlodids	159	20
Middle	Johnson Creek	MR-22	Maybury south	Y	1/14/2021	Capnids	203	
Middle	Johnson Creek	MR-27	Ridge	Y	1/13/2021	Capnids	174	
Middle	Johnson Creek	John1	5M Salem	N	1/23/2021		86	30
Middle	Johnson Creek	John2	5M NV	N	1/23/2021		108	25
Middle	Johnson Creek	John3	6M NV	Y	1/14/2021	Capnids	97	56
Middle	Johnson Creek	John6	Hines	N	1/23/2021		114	
Middle	Johnson Creek	John7	Arcadia	Y	1/14/2021	Capnids	97	46
Middle	Middle Rouge	Mid1	Northville Rec E	N	1/23/2021		346	
Middle	Middle Rouge	MR-2	Reservoir Rd	N	1/23/2021		370	
Middle	Middle Rouge	MR-18	Springbrook Rec	Y	1/23/2021	Capnids	346	
Middle	Tonquish Creek	Ton1	Plym Twp Pk	N	1/23/2021		222	187
Middle	Tonquish Creek	Ton1/2	Canton Ctr Rd	N	1/23/2021		222	187
Upper	Bell Branch	Bell2	Schoolcraft College	N	1/23/2021		602	
Upper	Minnow Pond	Min4	14 Mile	Y	1/23/2021	Capnids	455	335
Upper	Seeley Creek	See3	Kennedy Ct	N	1/23/2021		487	
Upper	Upper Rouge	Up1	Heritage Park	N	1/23/2021		455	
Upper	Upper Rouge	Up2	Shiawasee Park	Y	1/23/2021	Capnids	487	
red indicates chloride levels harmful to freshwater life								

Spring Bug Hunt: Sat. April 17 10 am-4 pm

Volunteers needed to help look for bugs in Rouge streams.

Register at therouge.org/bug-hunt-events-and-trainings

Contact Sally Petrella with any questions
or if you would like to sign up for Team Leader Training
spetrella@therouge.org or call 734 927-4904

2019 Frog & Toad Survey Report



2019 Rouge River Watershed Frog and Toad Survey

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



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 the 2019 survey was provided by Bosch and the Fred A. and Barbara M. Erb Family Foundation

Summary of Volunteer Effort

In 2019, one training workshop was held on Saturday March 16 at the Bloomfield Township Hall with 47 attendees. In addition, 74 veteran volunteers signed up, for a total of 121 participants signing up to survey 176 blocks. On April 26, 84 people attended a group listen in West Bloomfield to practice their listening skills.

Sixty survey teams submitted data for 126 survey blocks after the survey season was completed. One hundred blocks were thoroughly surveyed (four or more observations, observations made in early, mid and late season).

2019 Survey Results

For the 100 blocks that were fully surveyed, an average of 3.6 species was heard per block (Table 1). Five blocks that were fully surveyed had no species calling. American toads and green frogs were the most commonly heard species while wood frogs and leopard frogs were the least commonly heard (Table 2). The earliest species to call were American toads and bullfrogs on March 4th and the latest to start was the green frog on April 22 (Chart 2).

Eight species were heard calling in all but three subwatersheds, the Upper, Lower, and Main 3-4. The Middle 1 had the highest species diversity at 4.4 species per block. The Upper had the lowest percentage of species heard per block at 2.3, but only seven blocks were surveyed in that subwatershed.

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	34	3.0	6	8	
Upper	7	2.3	5	6	wood frog, spring peeper
Middle 1	33	4.4	7	8	
Lower 1	30	4.1	6	8	
Lower 2	6	2.2	7	7	gray treefrog
Middle 3	7	3.4	7	8	
Main 3-4	8	2.6	6	7	wood frog
Total	125	3.6			

Frog & Toad Diversity 1998-2019

The number of species that have been heard at least once in every survey block were compiled since the survey started in 1998. This includes data on 962 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.

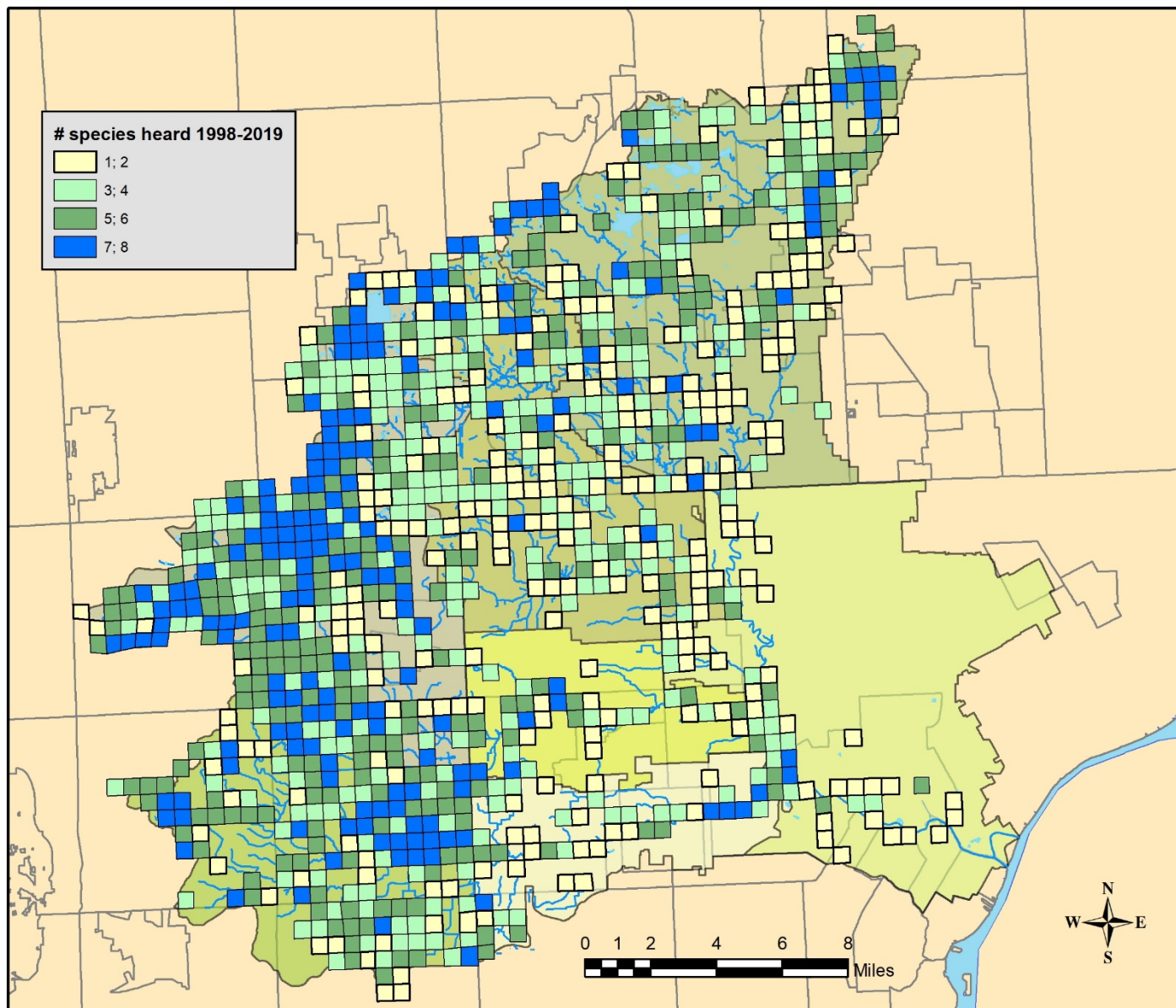
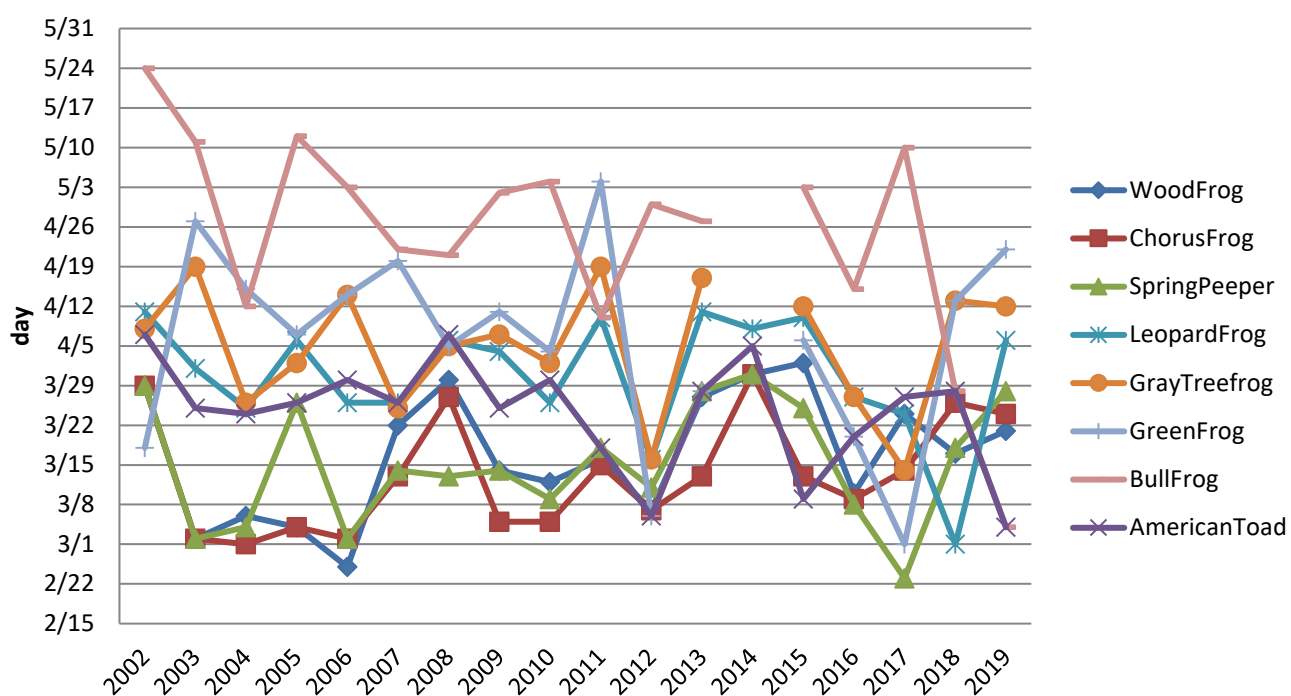
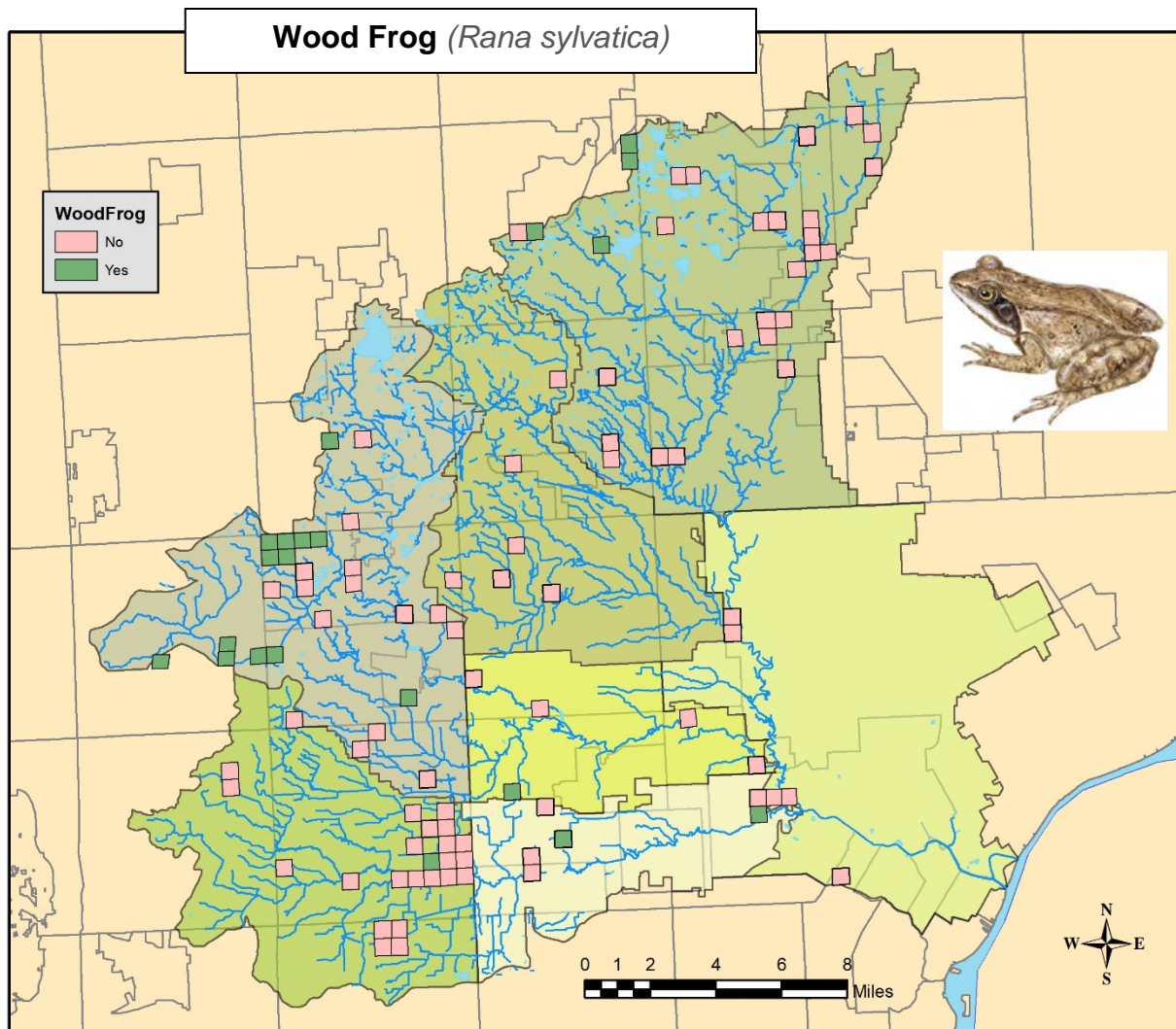


Table 2: Percent of blocks in which species was heard, 2000-2019

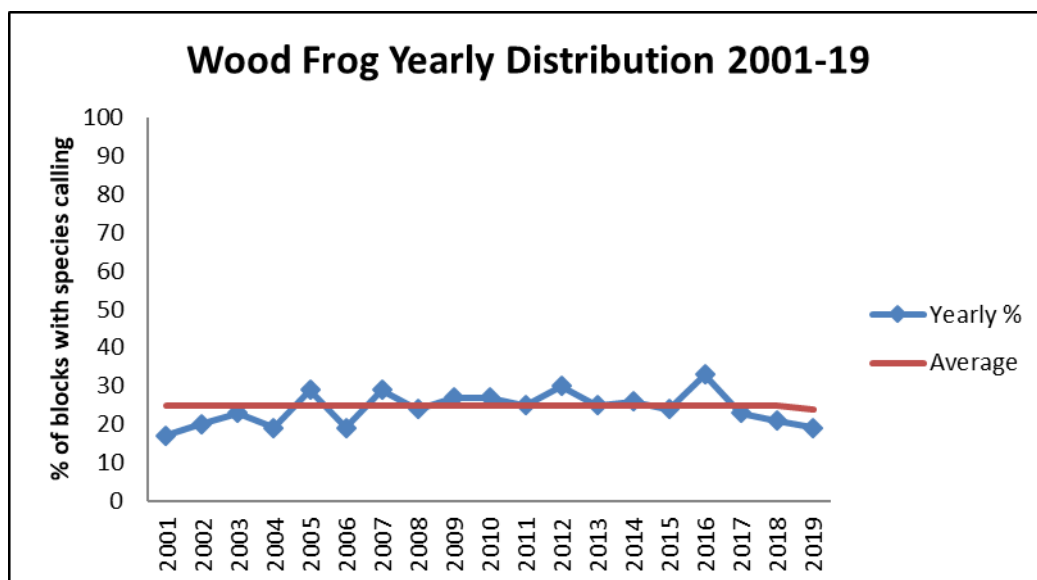
Year	average	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
wood Frog	24%	19%	21%	23%	33%	24%	26%	25%	30%	25%	27%	27%	24%	29%	19%	29%	19%	23%	20%	17%	14%
chorus frog	49%	48%	44%	48%	55%	46%	45%	54%	48%	39%	49%	46%	47%	57%	49%	57%	46%	48%	52%	49%	50%
spring peeper	49%	38%	45%	48%	54%	42%	40%	51%	56%	50%	49%	46%	56%	62%	55%	57%	41%	45%	50%	47%	48%
American toad	76%	83%	70%	85%	86%	85%	79%	77%	79%	80%	88%	84%	89%	87%	78%	74%	61%	62%	71%	58%	49%
leopard frog	15%	22%	12%	20%	16%	9%	16%	19%	22%	19%	19%	14%	18%	21%	12%	22%	5%	18%	8%	9%	5%
gray treefrog	51%	55%	51%	61%	69%	39%		54%	56%	54%	62%	48%	53%	64%	48%	57%	37%	40%	35%	37%	47%
green frog	59%	68%	49%	64%	70%	70%		64%	63%	64%	72%	68%	74%	70%	70%	64%	51%	53%	39%	38%	15%
bullfrog	15%	23%	16%	20%	17%	16%		19%	28%	17%	17%	12%	22%	17%	10%	22%	10%	13%	5%	7%	0%

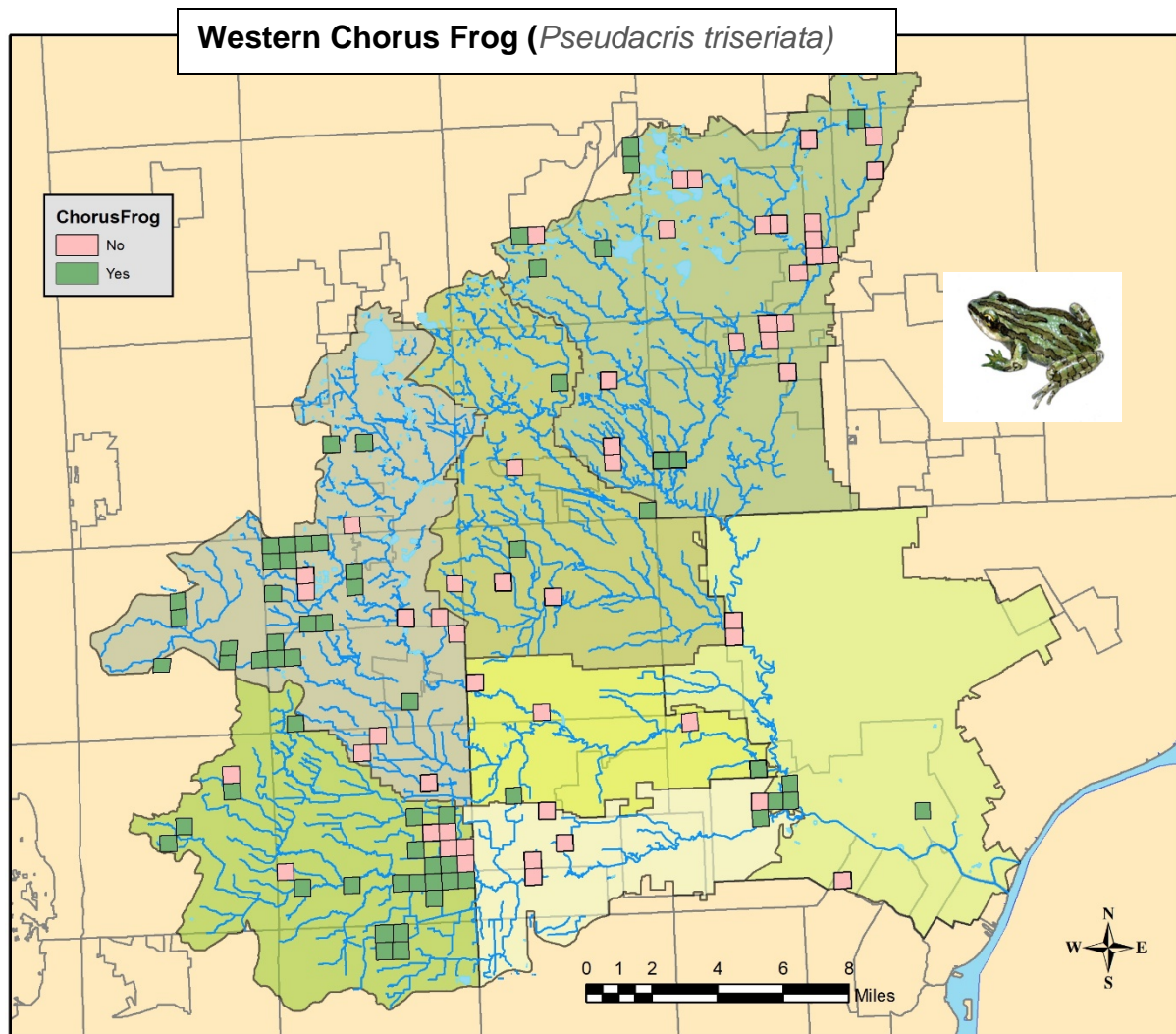
Chart 2: First Calling Dates for each Species, 2002-2019



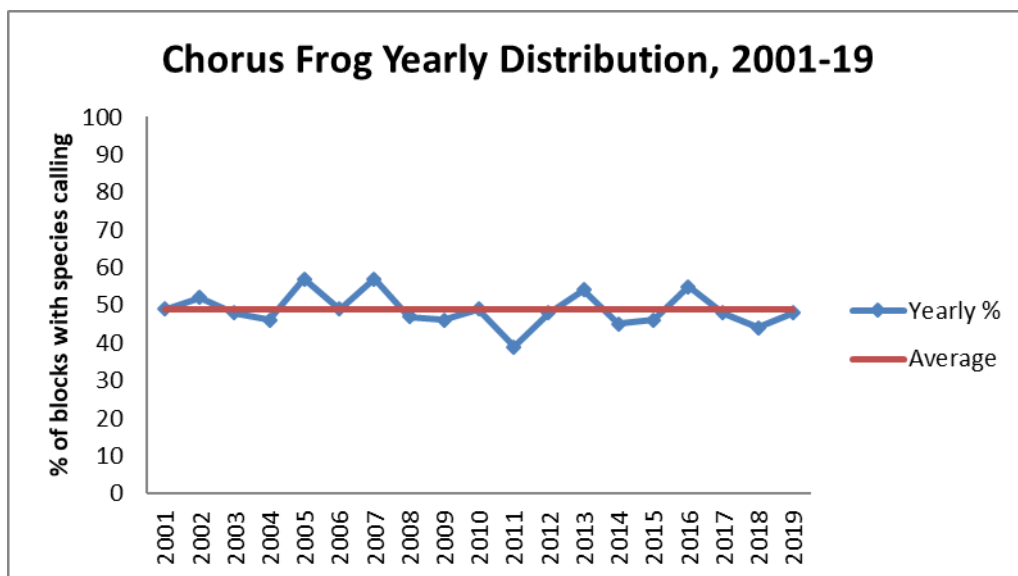


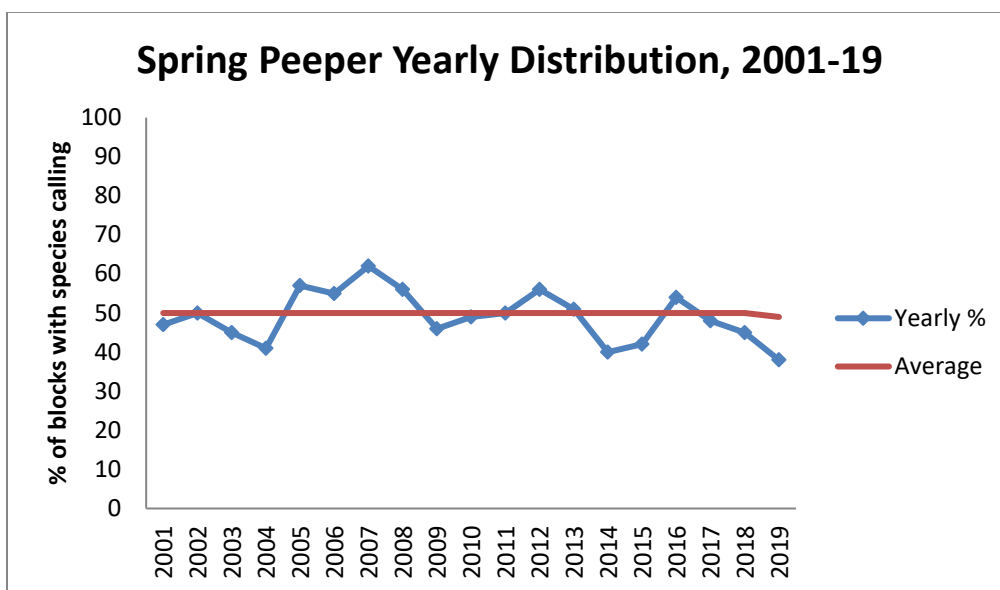
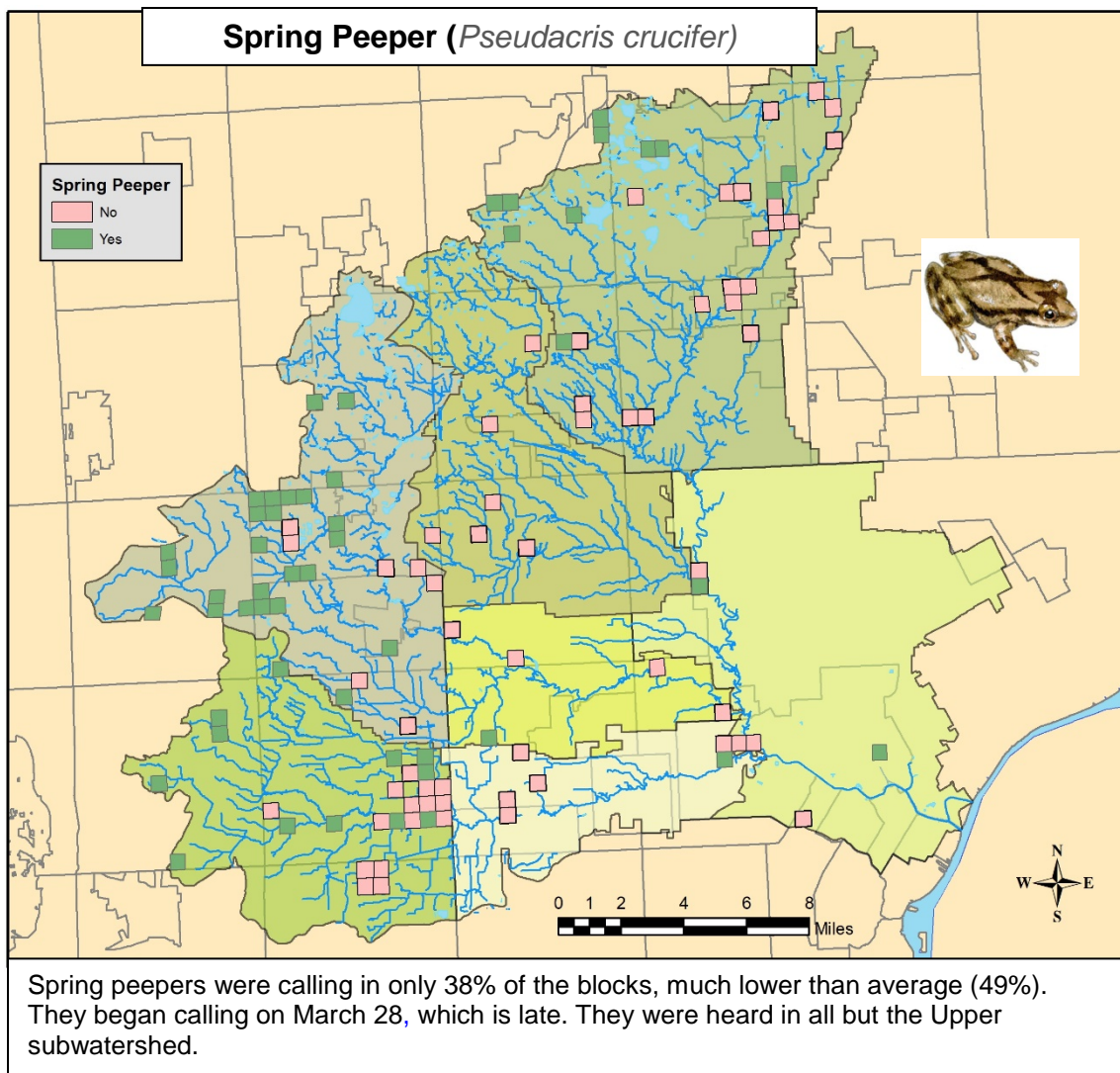
Wood frogs were heard in 19% of all survey blocks which is lower than average for the species (24%). They began calling on March 21, which is late. They were heard in all subwatersheds but the Main 3/4 and Upper.

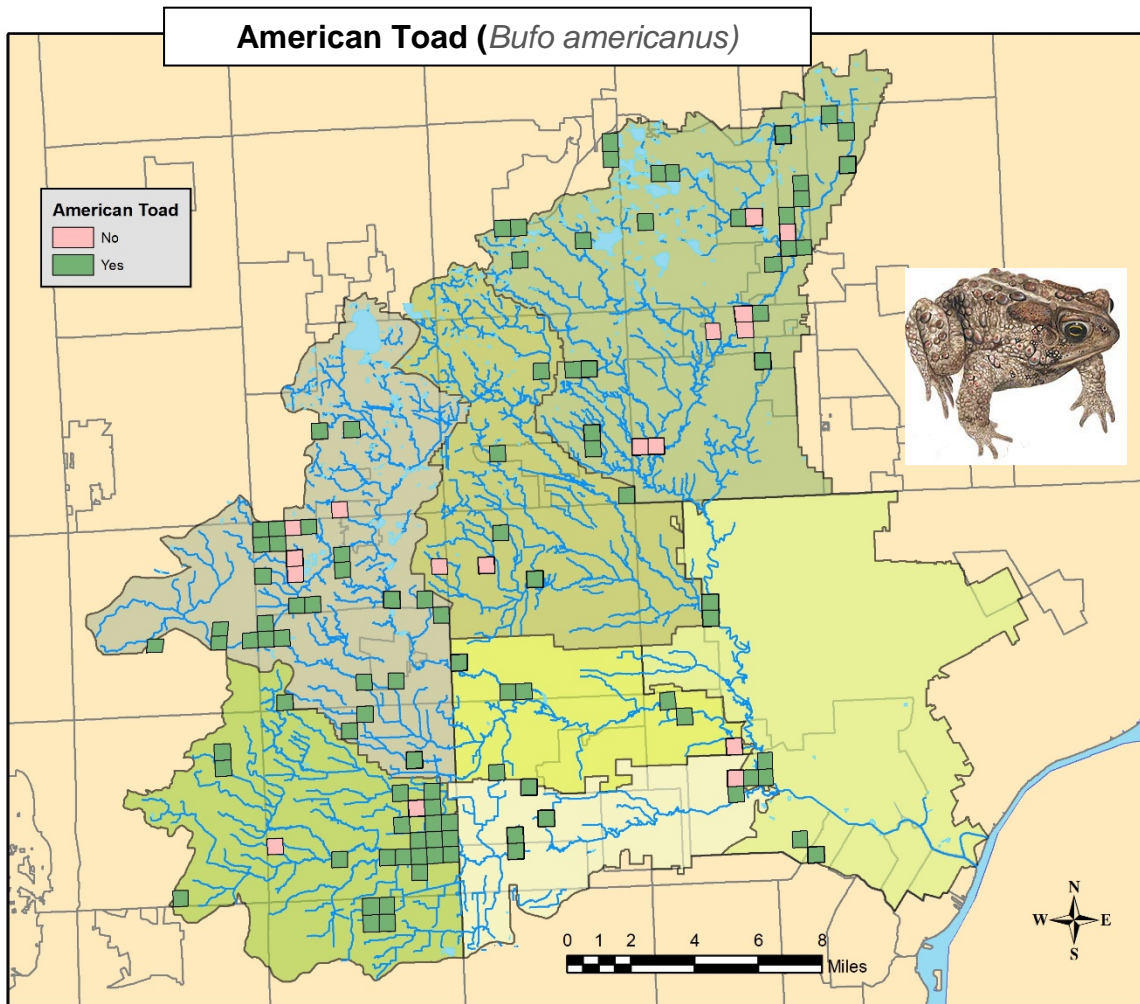




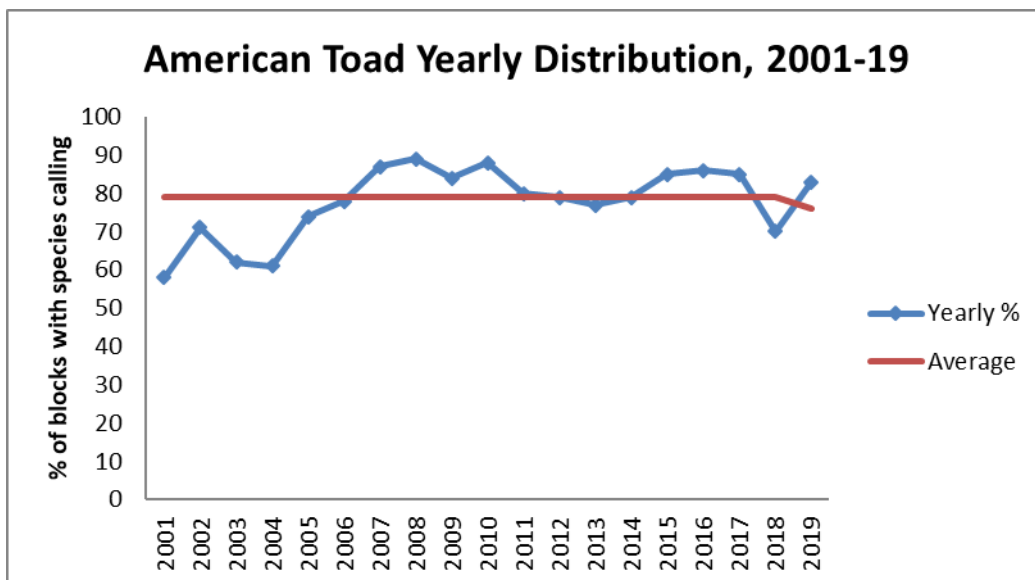
Western chorus frogs were heard in 48% of all survey blocks. This is close to the average (49%) for the species. They started calling on March 24, which is late. Chorus frogs were heard in all seven subwatersheds.

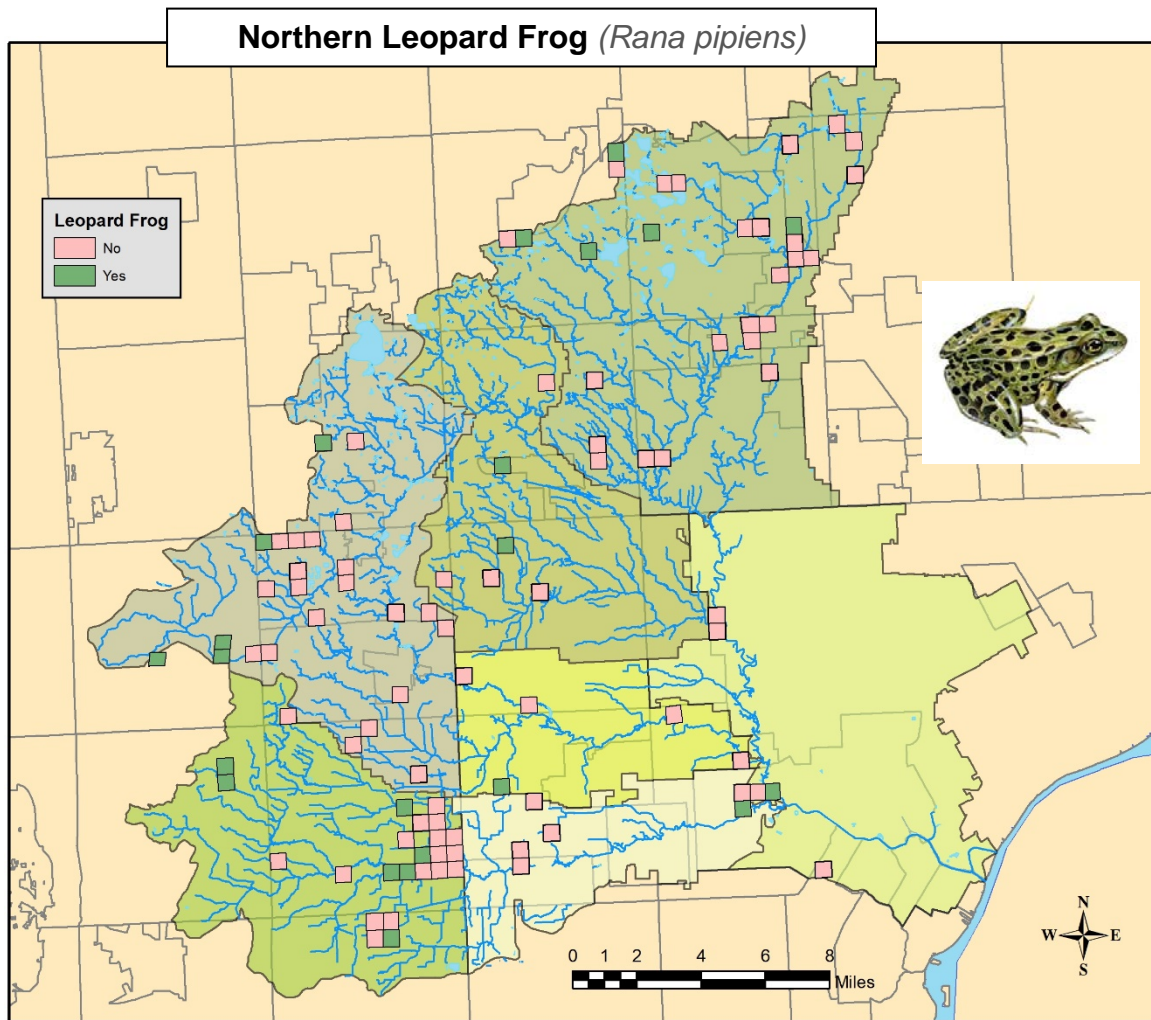




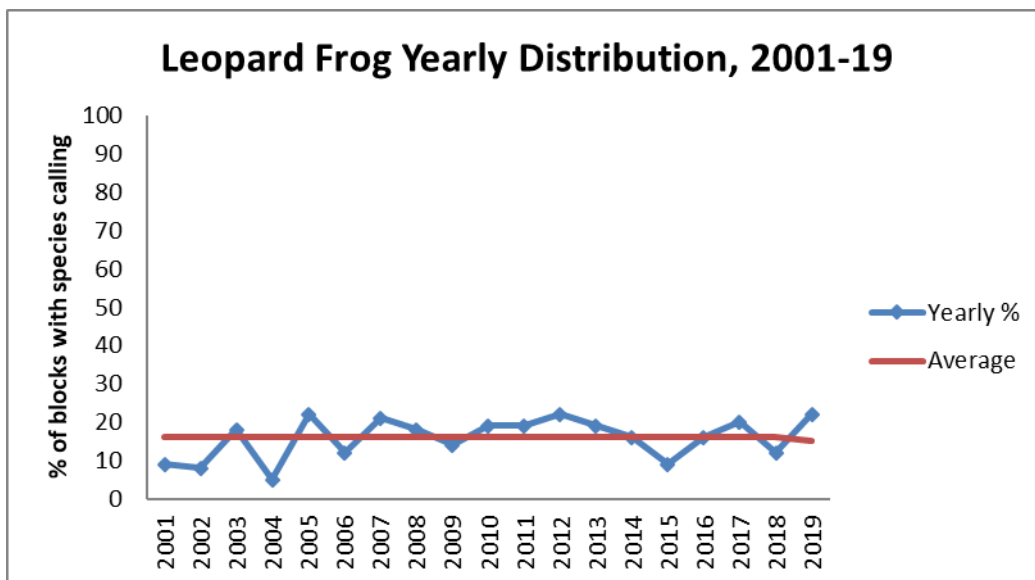


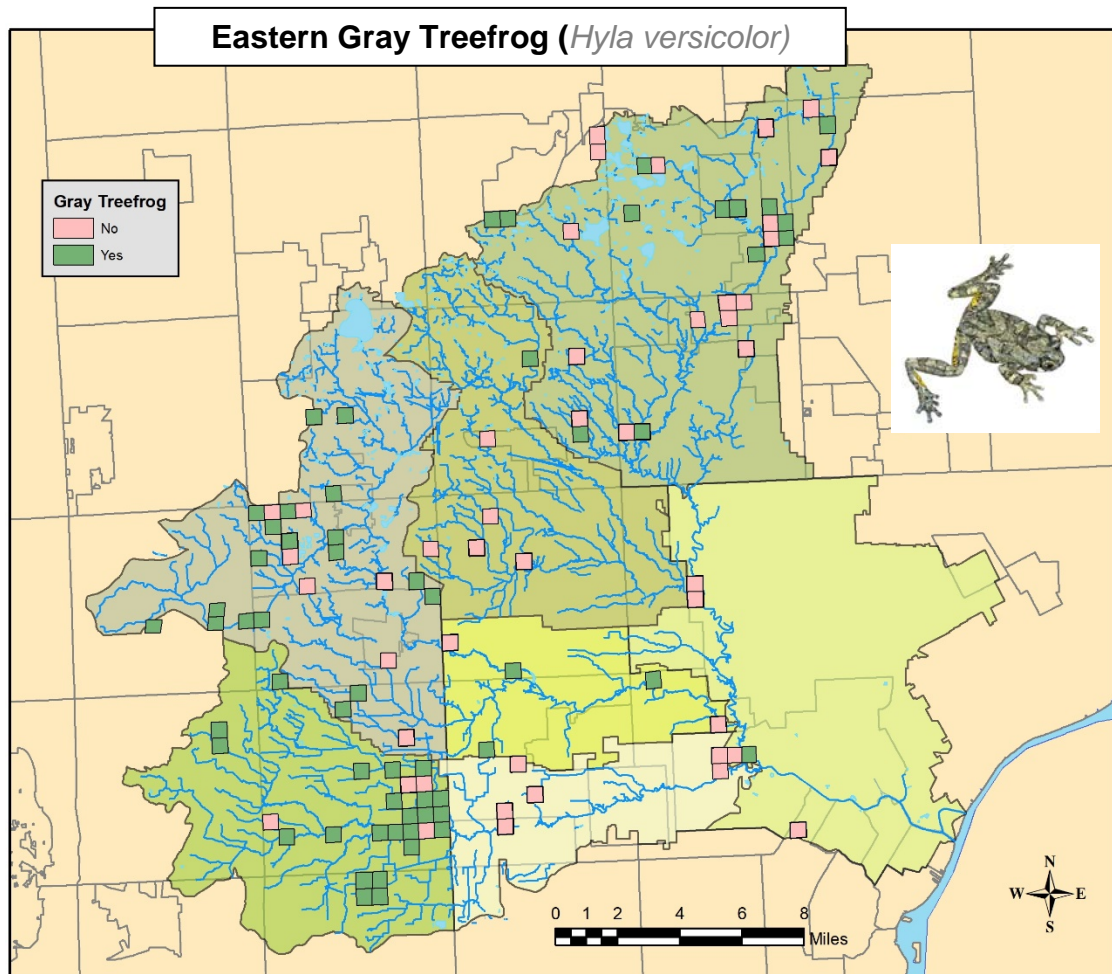
American toads were calling in 83% of all blocks which is much higher than average (76%). They began calling on March 4, which is much earlier than average for the species, which is usually March 24. They were heard in all seven subwatersheds.



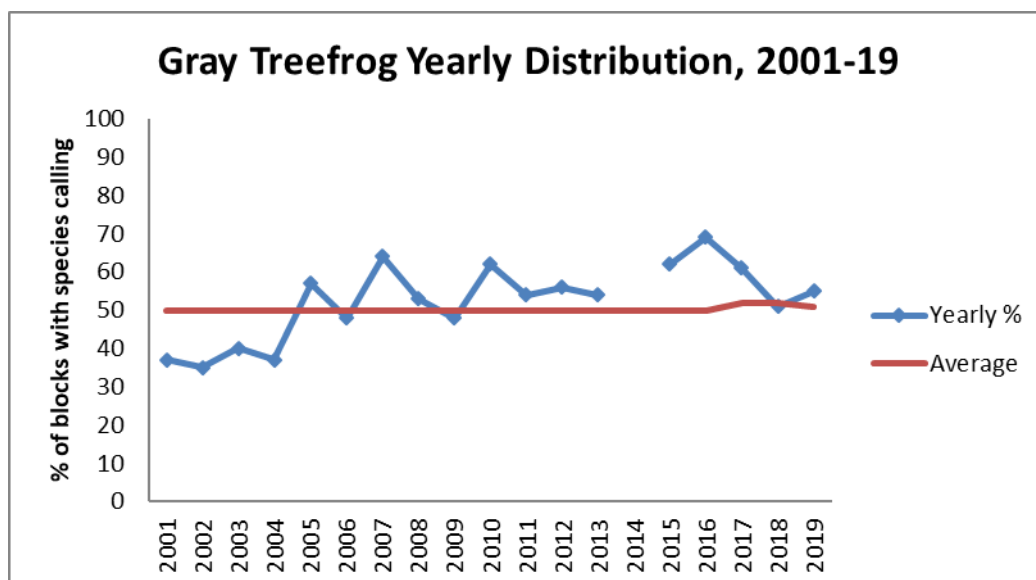


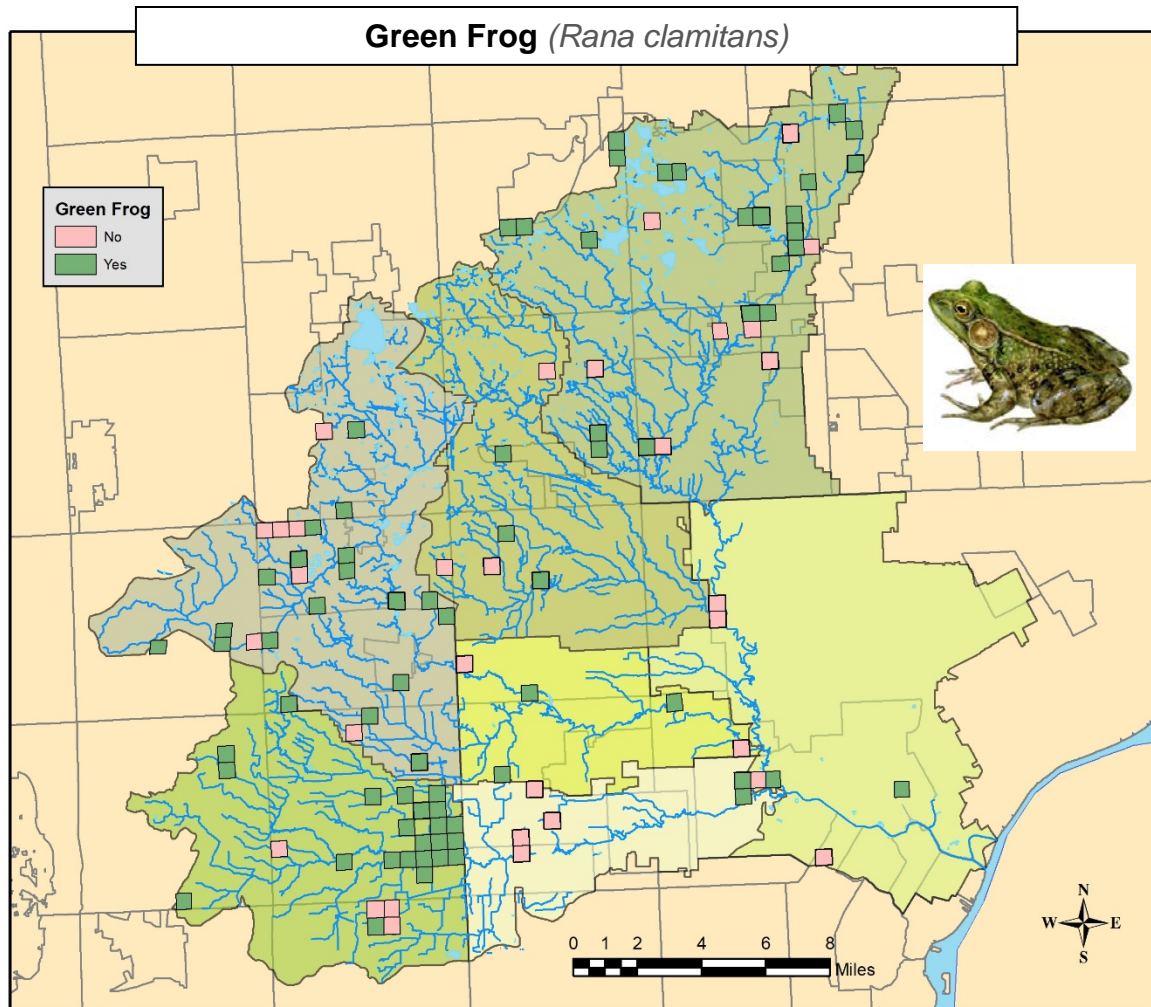
Northern Leopard Frogs, one of the most sensitive species in the watershed, were calling in 22% of all blocks, which is higher than the average of 15% for this species. They were heard in all seven subwatersheds. They started calling on April 6, which is late for the species.



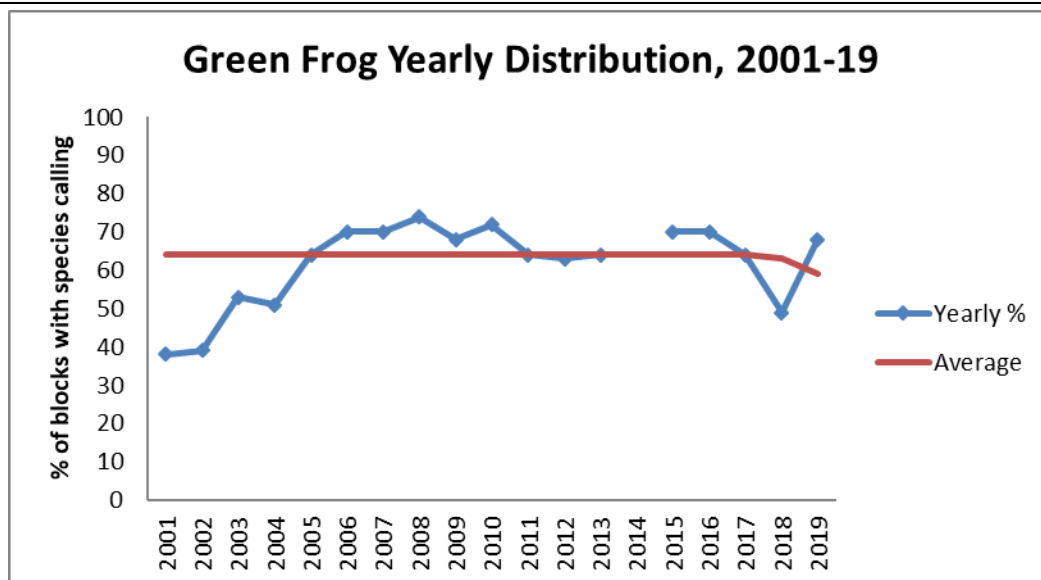


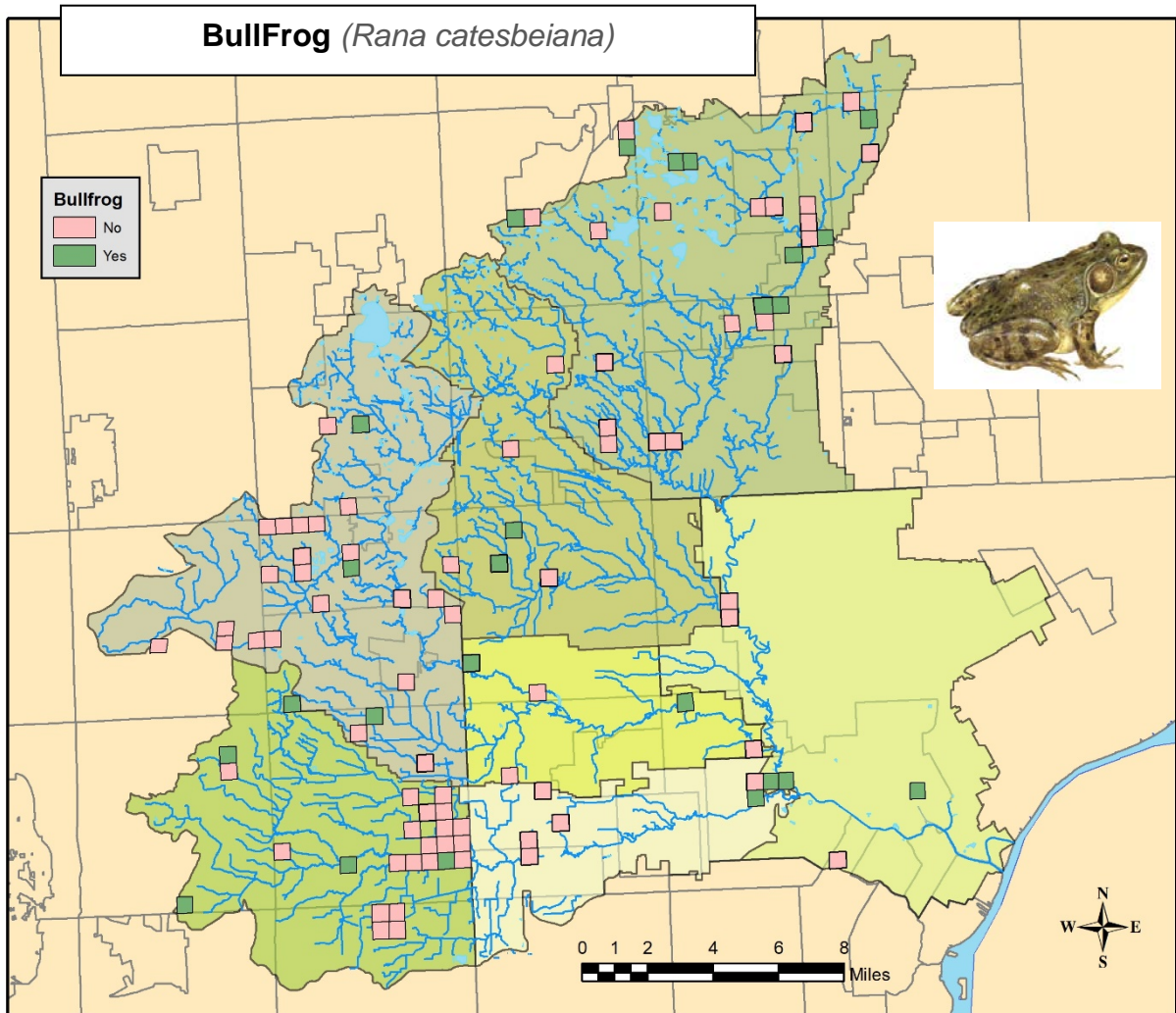
Eastern gray treefrogs were heard in 55% of all blocks, which is higher than average (51%). They were not heard in the Lower 2 subwatershed. They began calling on April 21, which is late.



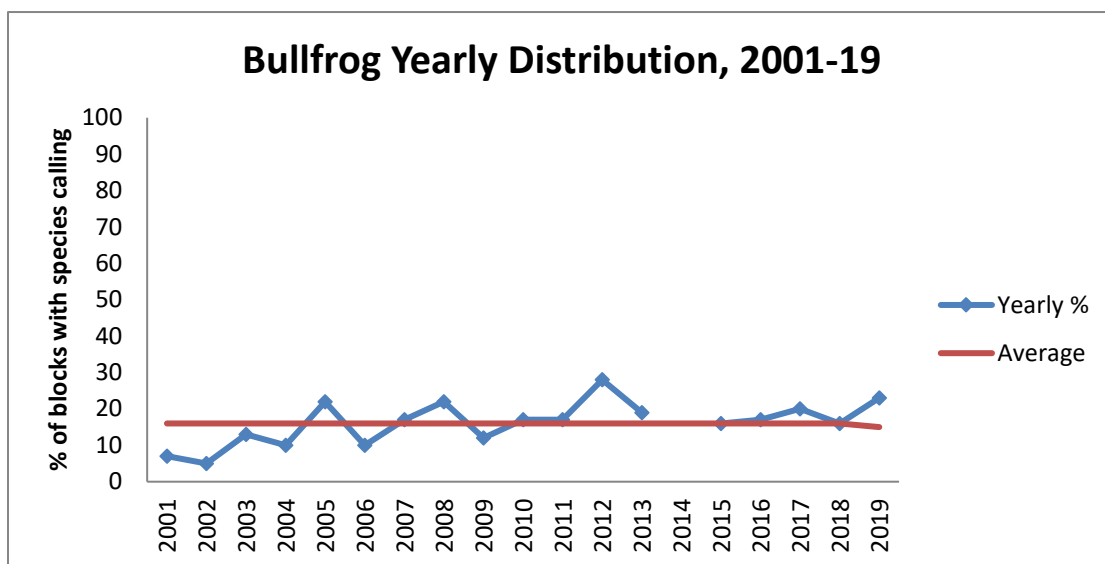


Green frogs were heard in 68% of blocks which is much higher than average (59%). They started calling on April 22, which is early. They were heard in all seven subwatersheds.





Bullfrogs were heard in 23% of blocks, which is much higher than average (15%). They started calling on March 4, which is very early. They were heard in all seven subwatersheds.



2020 Frog & Toad Survey Report



2020 Rouge River Watershed Frog and Toad Survey

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



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 June. 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 the 2020 survey was provided by Bosch, the Fred A. and Barbara M. Erb Family Foundation, memberships and in-kind support from the City of Livonia.

Introduction

Like almost everything in 2020, the COVID-19 pandemic had an impact on the annual Frog and Toad Survey, with news of the virus reaching our region just as we began our training workshops in March. Having held these workshops in person for 22 years, we were unprepared to move to a virtual format when our second workshop had to be cancelled a few days before. Nonetheless, most of the registered volunteers were more than willing to self-train and over time we were able to adapt some of our training to a virtual format.

During this pandemic, recreating outdoors is a rare safe thing to do and people flocked to the survey. As one volunteer put it, "few things are more comforting in these times than nature." With schools shutting down and parents struggling to adapt and teach their children at home, taking them out to survey was a welcome addition to so much time spent indoors learning online. One surveyor reported "listening for frogs has been a lovely point of normality during these surreal times."

The pandemic upended people's lives and many surveyors had to drop out when they got sick, could not travel to or access their listening site, or because they were so busy negotiating their forever changed lives that the survey was too much to do. We greatly appreciate those who were able to participate this year and sympathize with those who were not. For 2021, all of our training will be offered online and we hope that people can find time to go outside and relax and listen for frogs and toads.

Summary of Volunteer Effort

In 2020, one in person training workshop was held on Saturday March 7 at the Livonia Civic Center Library with 79 attendees. A second workshop scheduled for Saturday March 14 at the Plymouth District Library had to be cancelled when the library shut down due to concerns over COVID-19. Despite this, sixty-one of the registered volunteers agreed to self-train and Friends of the Rouge distributed the training materials and forms. An additional 12 volunteers contacted Friends of the Rouge after the workshop and also agreed to self-train. Our veteran volunteers continue to come back every year and 126 signed up to cover their blocks. We held a training

webinar via Zoom with 18 who participated or listened afterwards. We had a total of 204 primary contacts signing up to survey 228 blocks, doubling last year's 113. The group listen in West Bloomfield was cancelled due to COVID.

Seventy-three survey teams submitted data for 184 survey blocks. Of those blocks, 127 were thoroughly surveyed (four or more observations, observations made in early, mid and late season).

2020 Survey Results

For the 127 blocks that were fully surveyed, an average of 3.4 species was heard per block (Table 1). Eleven blocks that were fully surveyed had no species calling (map p. 4). American toads, gray treefrogs, and green frogs were the most commonly heard species while wood frogs and leopard frogs were the least commonly heard (Table 2). Blocks reporting wood frogs have been declining in recent years while blocks reporting gray treefrogs have been increasing. The earliest species to call were Midland chorus frogs (formerly called western chorus frogs) on March 8th and the latest to start were green frogs on April 26 (Chart 2).

All but three subwatersheds (Lower 2, Middle 3 and Upper) had all eight species calling in at least one block. The Lower 1 had the highest species diversity at 4.5 species per block, followed by the Main 3-4 at 4.3. The Middle 3 had the lowest percentage of species at 1.8 heard per block.

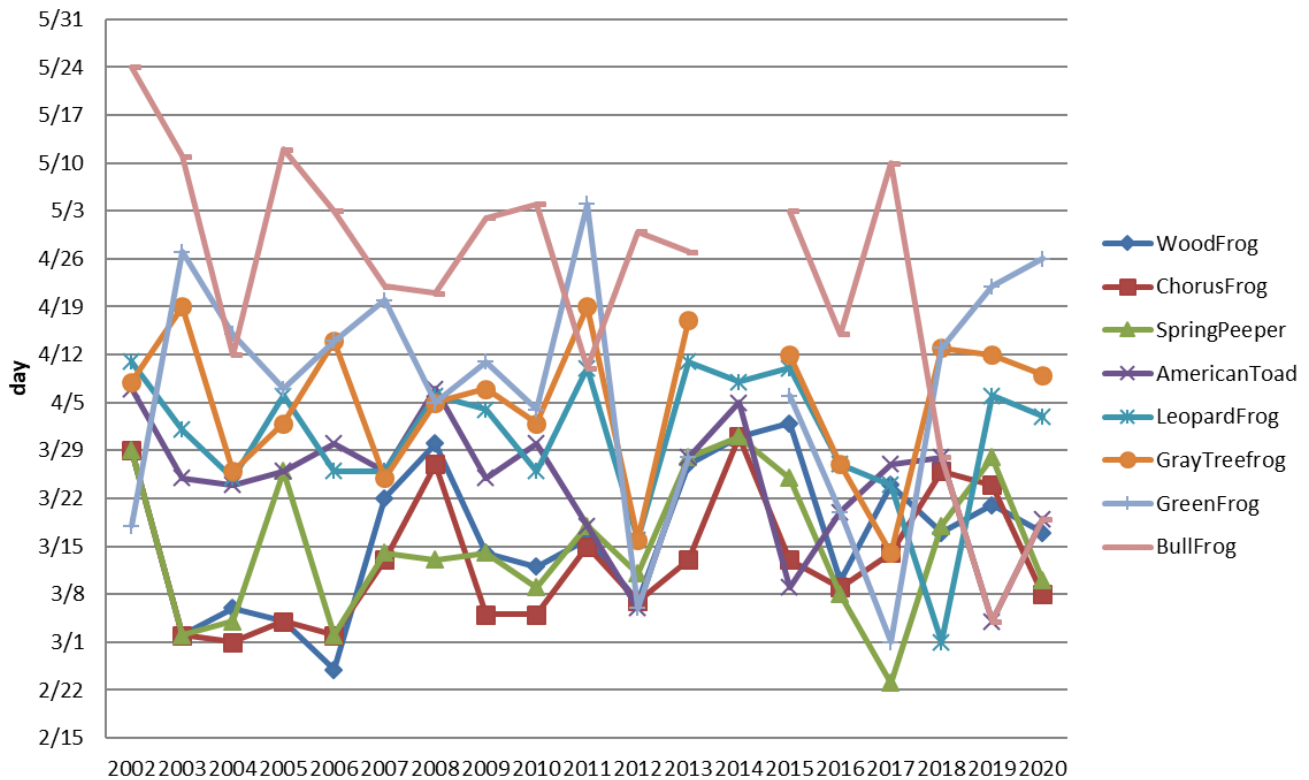
Table 1: Blocks by Subwatershed

subwatershed	# blocks surveyed	avg. # species heard per block	highest # species heard in one block	# species in Subwatershed	Species not heard
Lower 1	27	4.5	7	8	
Lower 2	8	1.9	5	7	Wood frog
Main 1-2	30	3.4	8	8	
Main 3-4	8	4.3	8	8	
Middle 1	32	3.9	7	8	
Middle 3	10	1.8	5	7	Wood frog
Upper	12	1.9	4	7	Wood frog
Total	127	3.4			

Table 2: Percent of blocks in which species was heard, 2000-2020

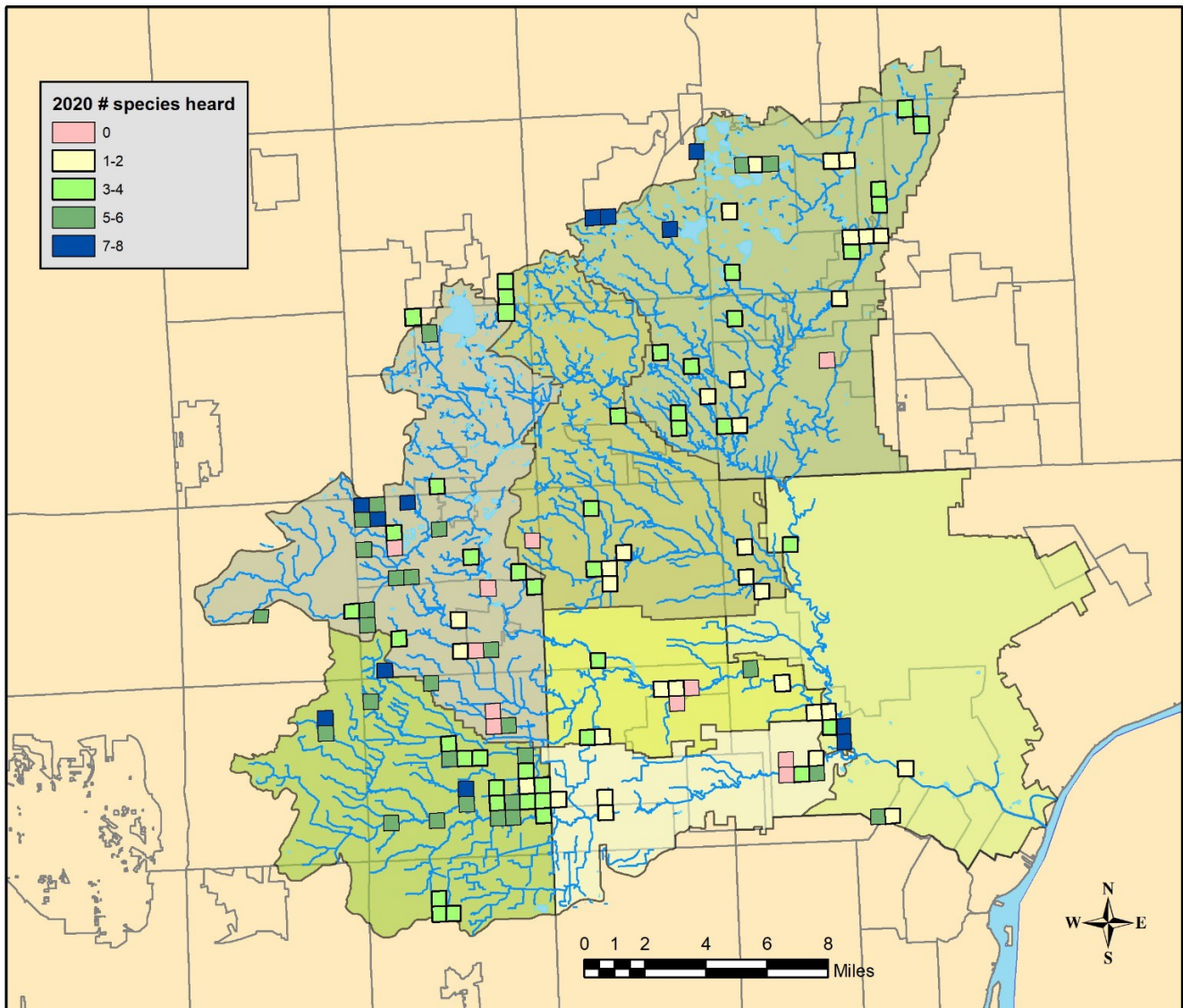
Species	average	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
Wood Frog	23%	13%	19%	21%	23%	33%	24%	26%	25%	30%	25%	27%	27%	24%	29%	19%	29%	19%	23%	20%	17%	14%
Midland Chorus Frog	49%	47%	48%	44%	48%	55%	46%	45%	54%	48%	39%	49%	46%	47%	57%	49%	57%	46%	48%	52%	49%	50%
Northern Spring Peeper	49%	46%	38%	45%	48%	54%	42%	40%	51%	56%	50%	49%	46%	56%	62%	55%	57%	41%	45%	50%	47%	48%
American Toad	77%	83%	83%	70%	85%	86%	85%	79%	77%	79%	80%	88%	84%	89%	87%	78%	74%	61%	62%	71%	58%	49%
Northern Leopard Frog	15%	16%	22%	12%	20%	16%	9%	16%	19%	22%	19%	19%	14%	18%	21%	12%	22%	5%	18%	8%	9%	5%
Gray Treefrog	51%	60%	55%	51%	61%	69%	39%		54%	56%	54%	62%	48%	53%	64%	48%	57%	37%	40%	35%	37%	47%
Green Frog	59%	60%	68%	49%	64%	70%	70%		64%	63%	64%	72%	68%	74%	70%	70%	64%	51%	53%	39%	38%	15%
Bullfrog	16%	22%	23%	16%	20%	17%	16%		19%	28%	17%	17%	12%	22%	17%	10%	22%	10%	13%	5%	7%	0%

Chart 1: First Calling Dates for each Species, 2002-2020



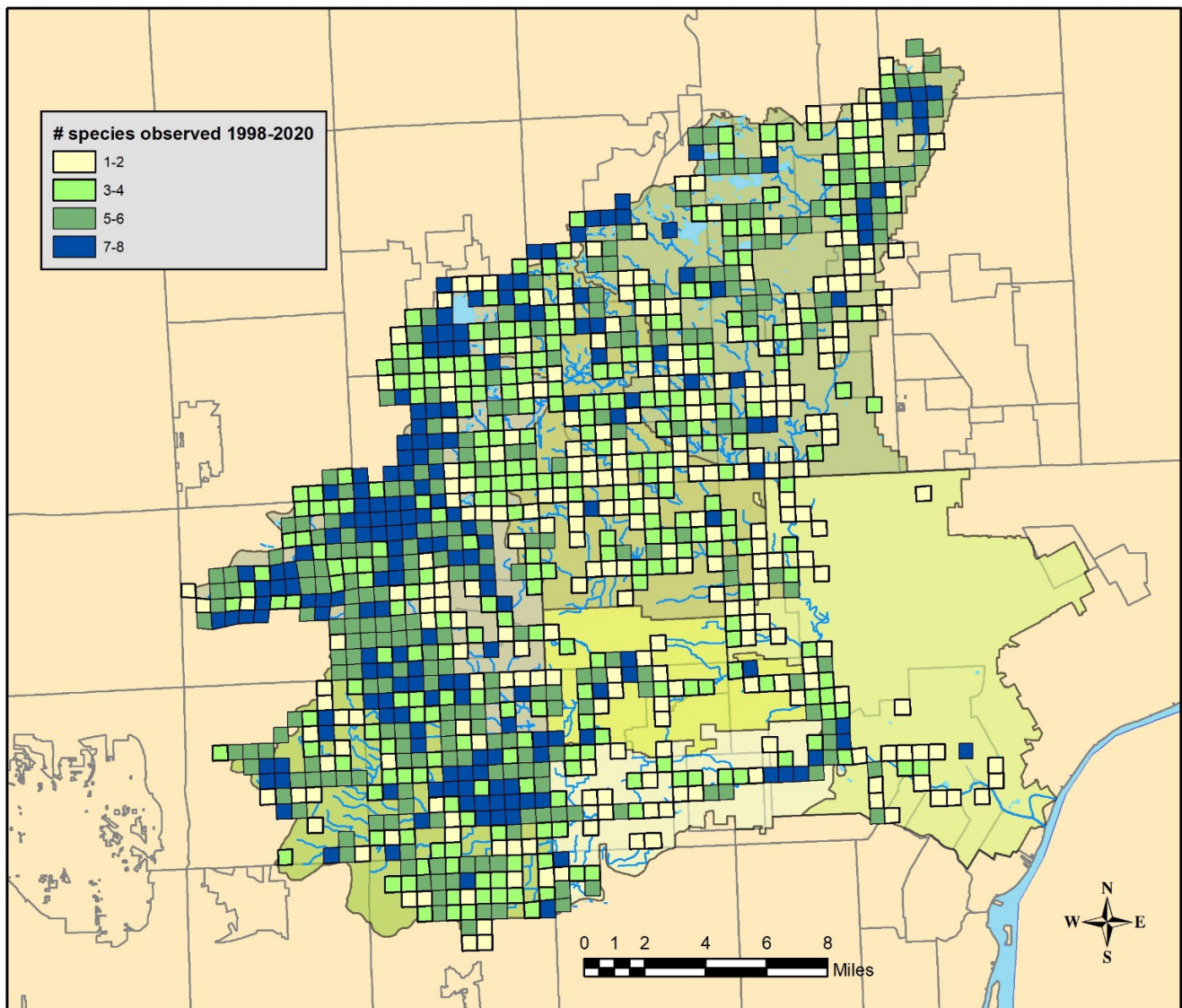
2020 Diversity

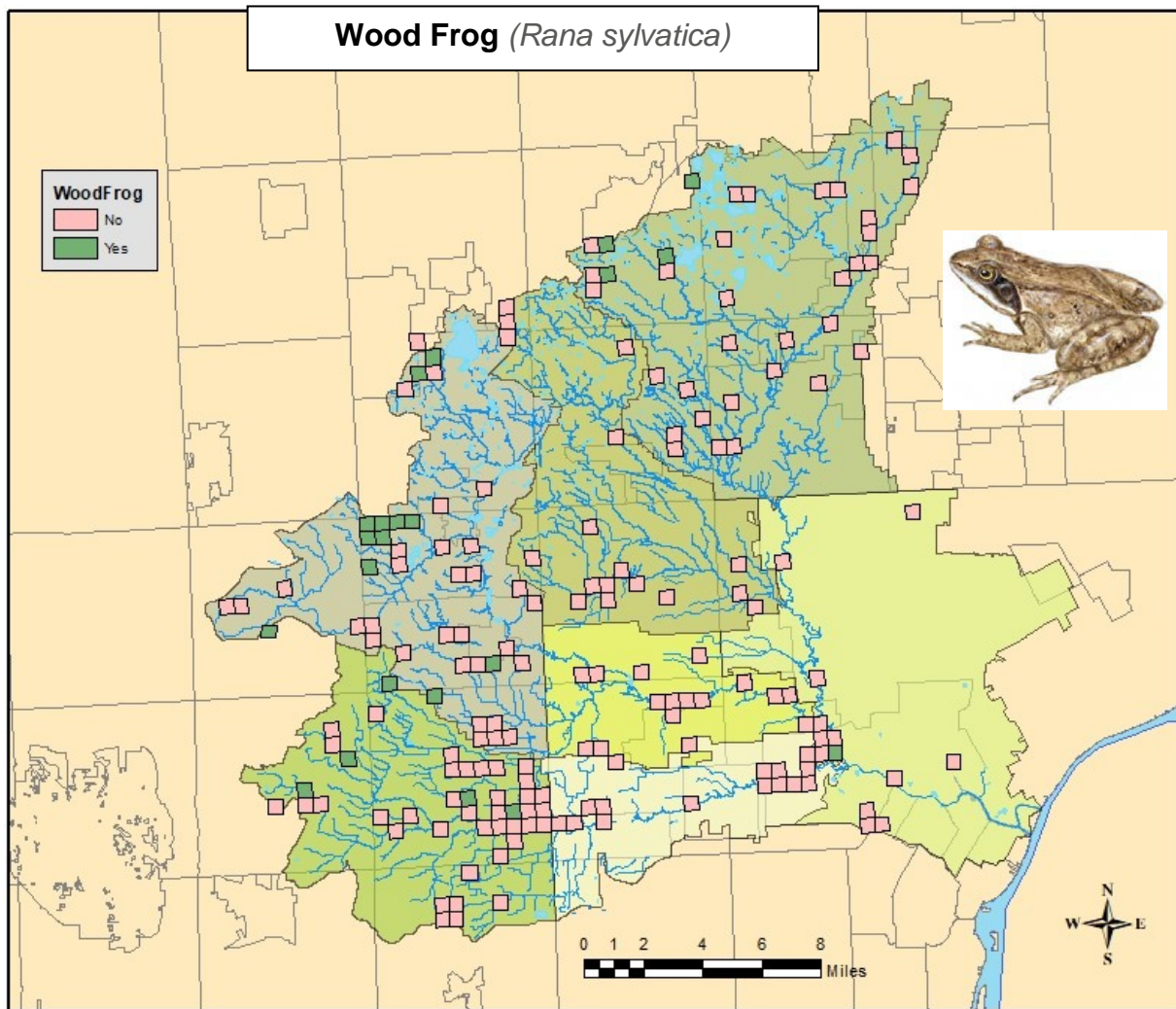
Like past years, the headwaters where creeks are smaller and wetlands are more plentiful as well as the protected natural areas near the University of Michigan-Dearborn are home to a higher number of species. This year, an unusually high number of surveyors reported hearing nothing despite their diligence in surveying on a regular basis throughout the survey period and under ideal conditions for calling. Several of these survey blocks have had calling frogs and toads in the past, one in particular was once home to five species. As natural areas are replaced with buildings and paved surfaces, amphibians will not survive.



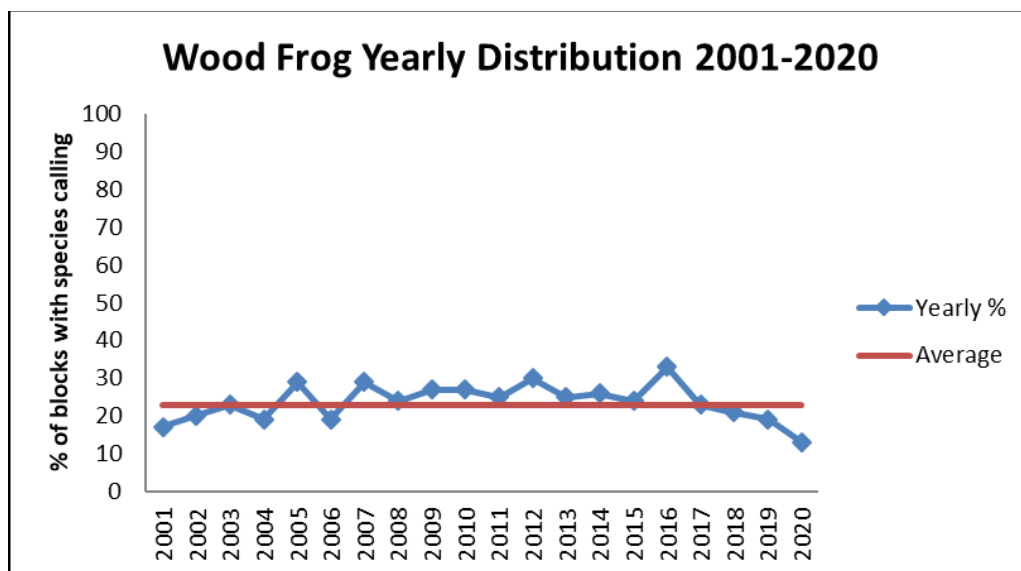
Frog & Toad Diversity 1998-2020

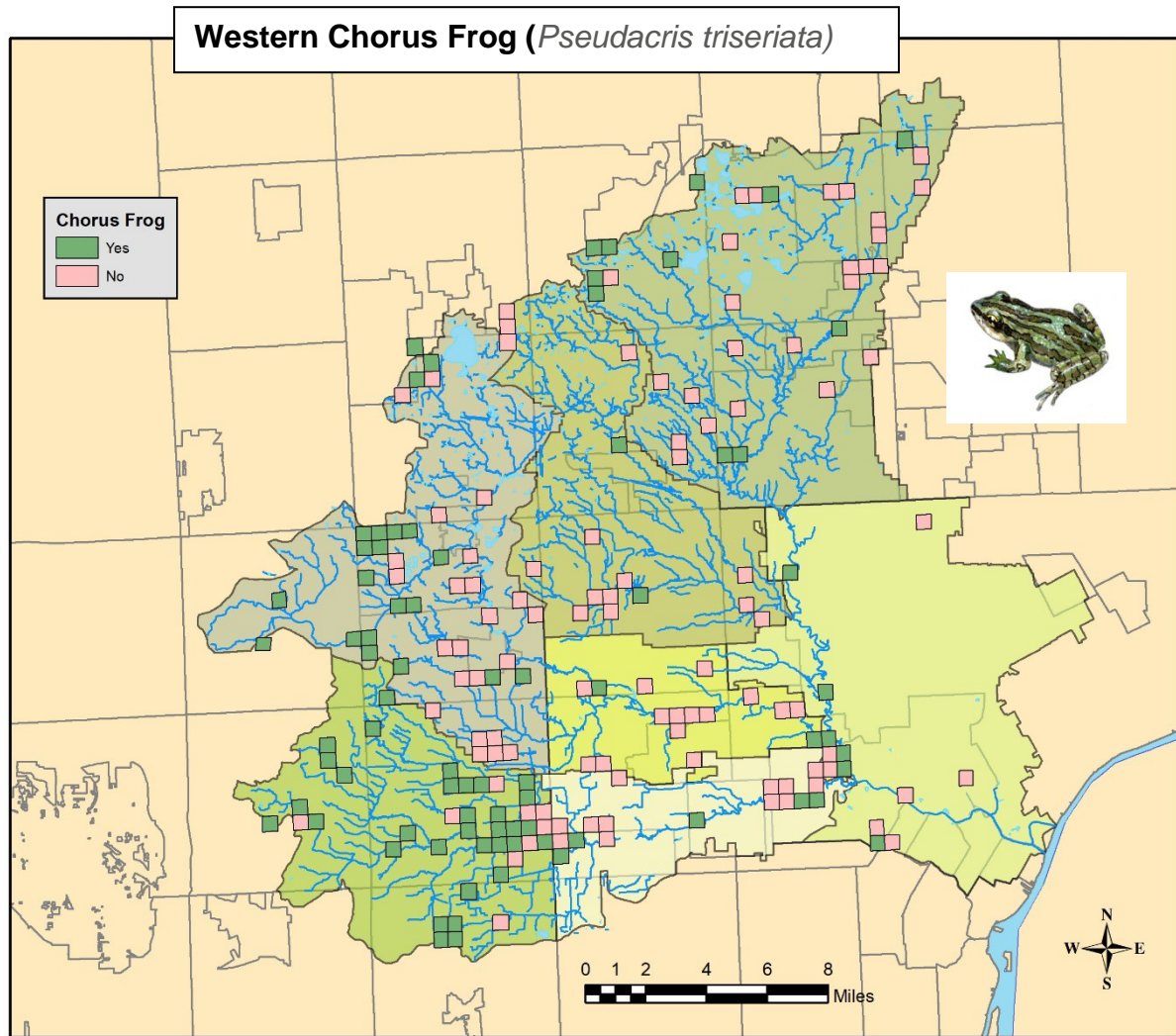
The number of species that have been heard at least once in every survey block were compiled since the survey started in 1998. This includes data on 978 survey blocks. The resulting map shows how many species have been found in each block. A high diversity of species is linked with high quality wetlands. For an online map where you can click on each block to learn what species have been heard in what years, visit: [Rouge Frog & Toad Survey 1998-2020](#).



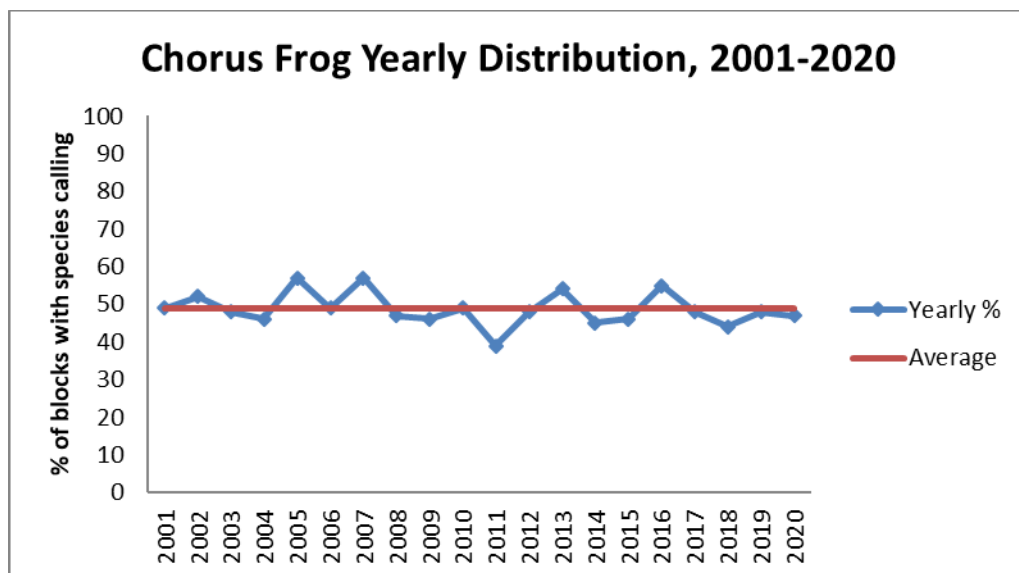


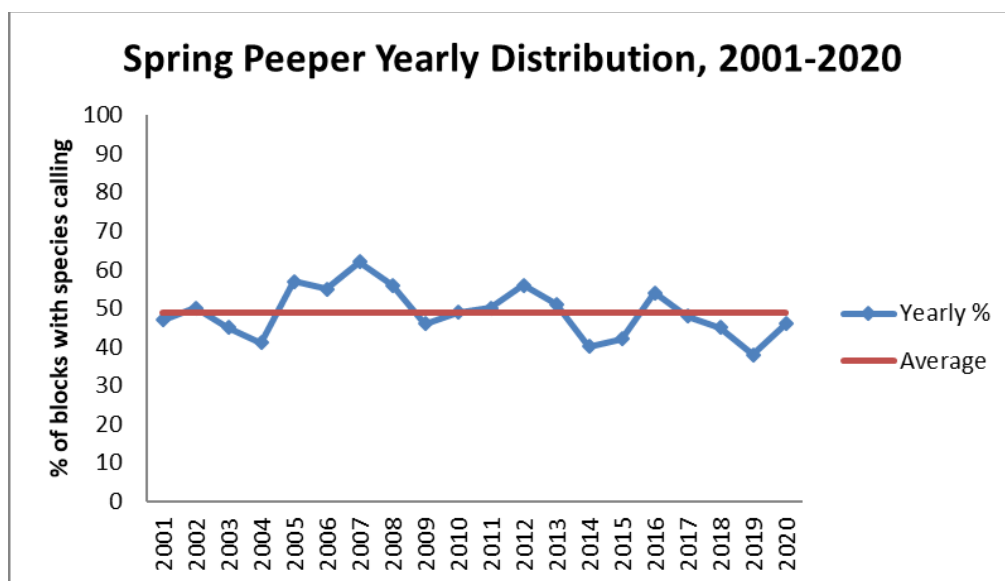
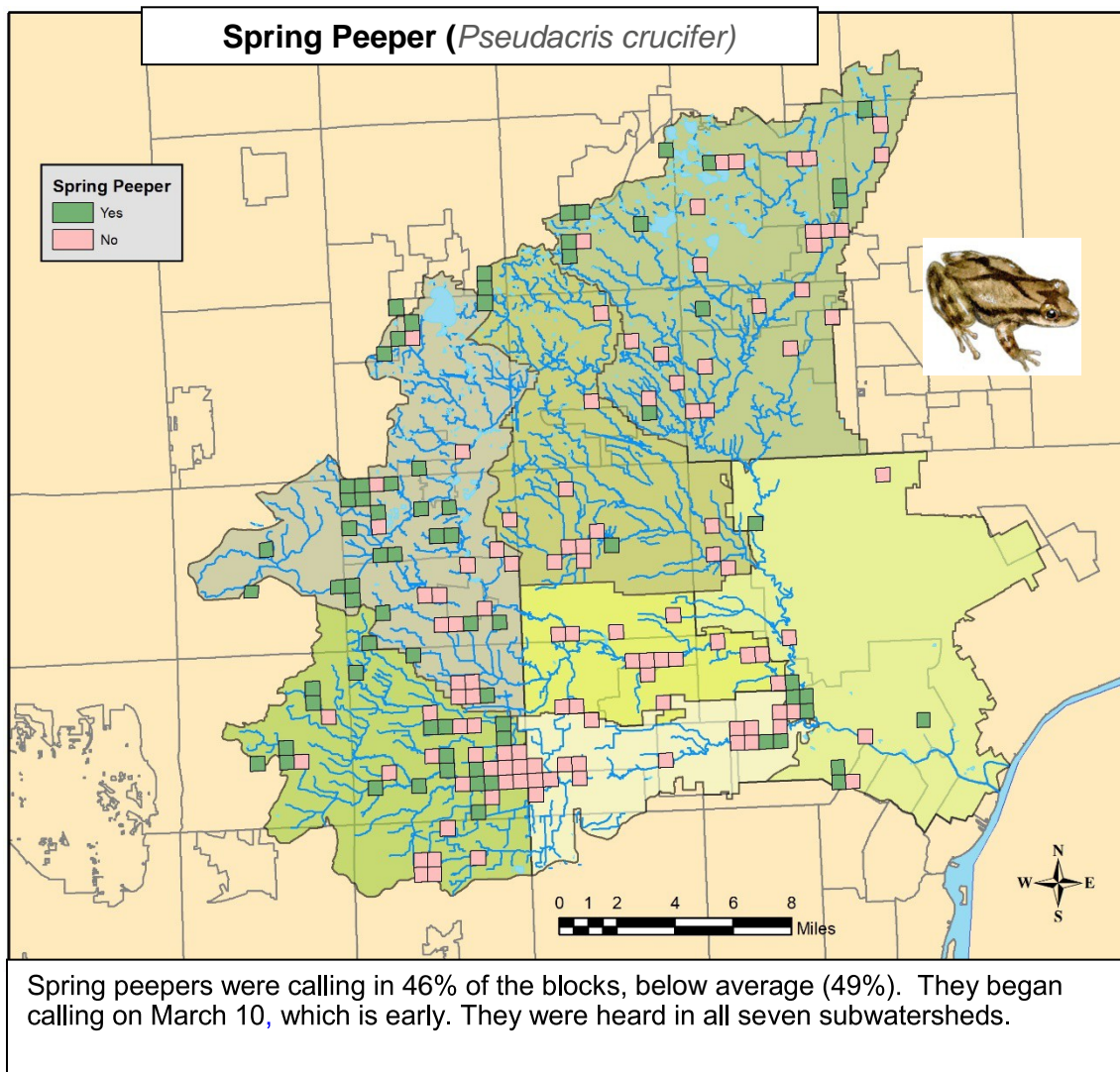
Wood frogs were heard in 13% of all survey blocks, lower than average for the species (23%) and a downward trend that started in 2017. They began calling on March 17, which is average. They were not heard in the Middle 3, Lower 2 or Upper subwatersheds.

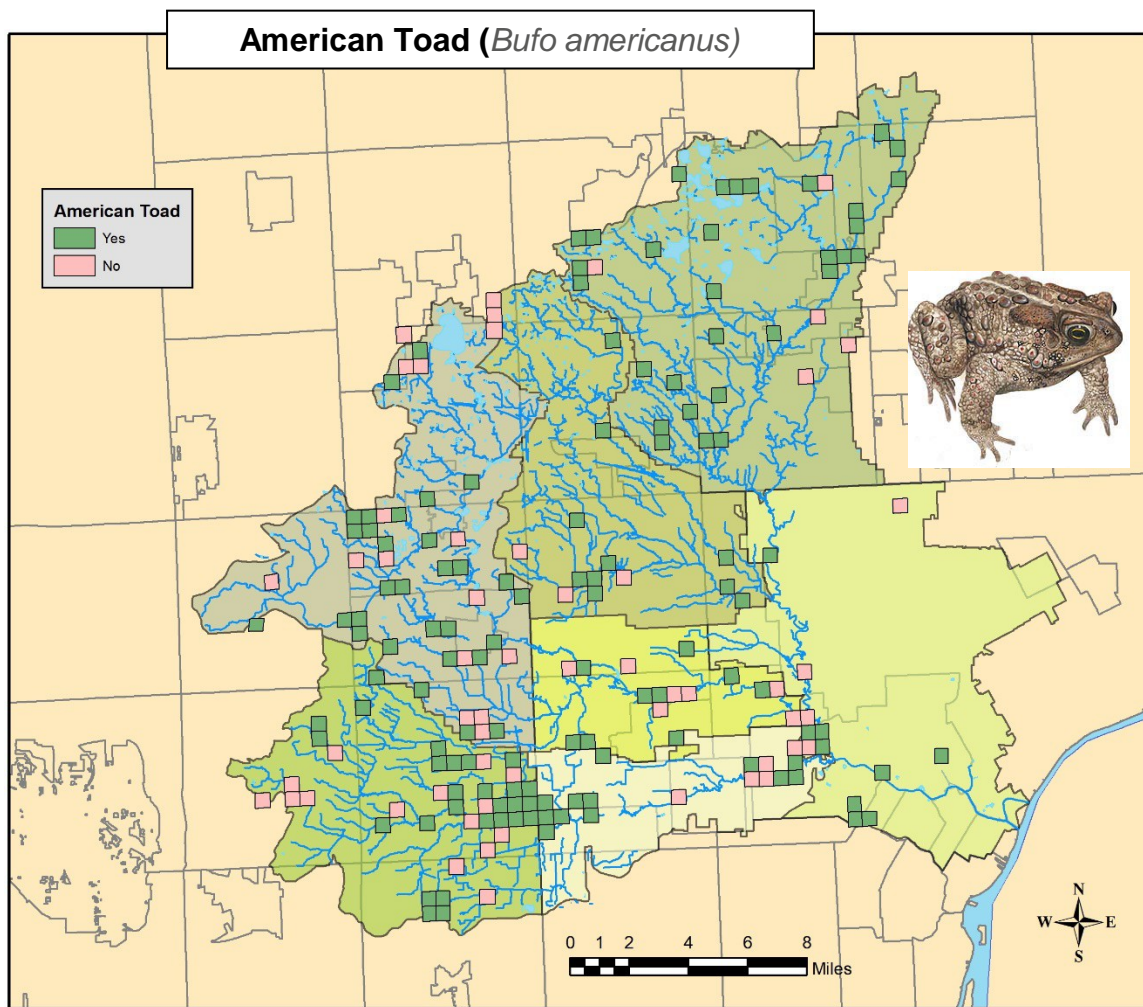




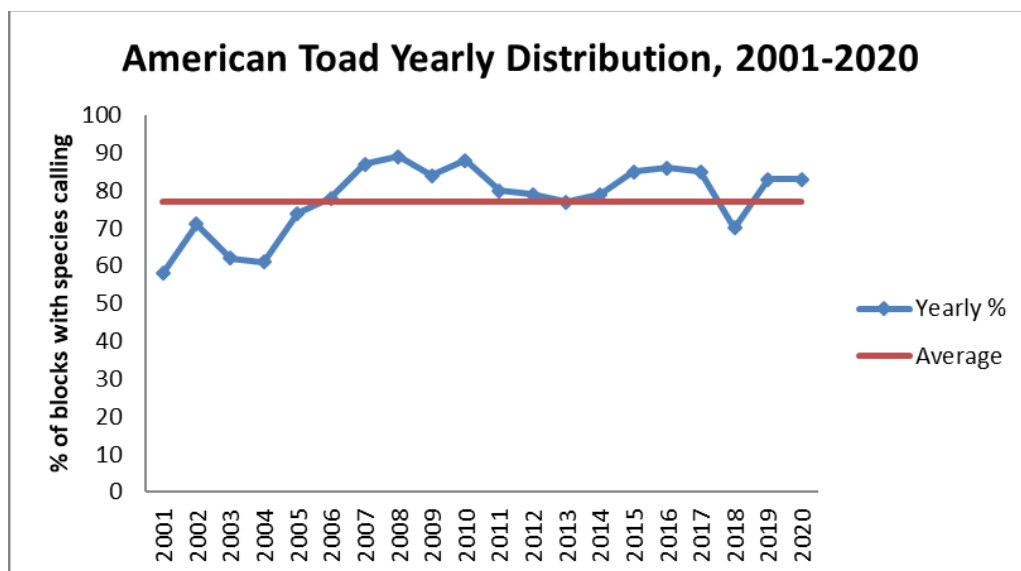
Western chorus frogs (midland chorus frogs) were heard in 47% of all survey blocks. This is below average (49%) for the species. They started calling on March 8, which is late. Chorus frogs were heard in all seven subwatersheds.

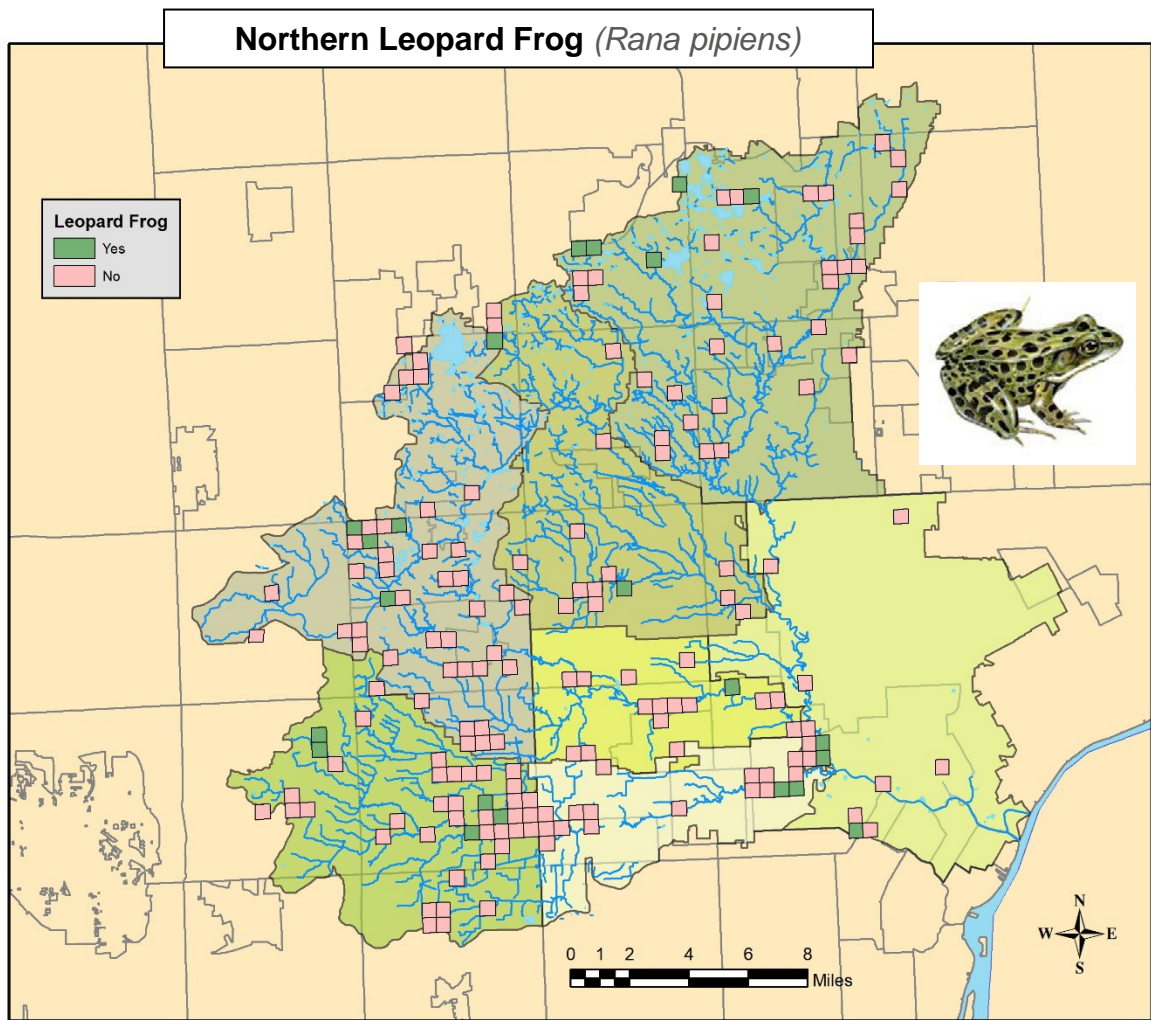




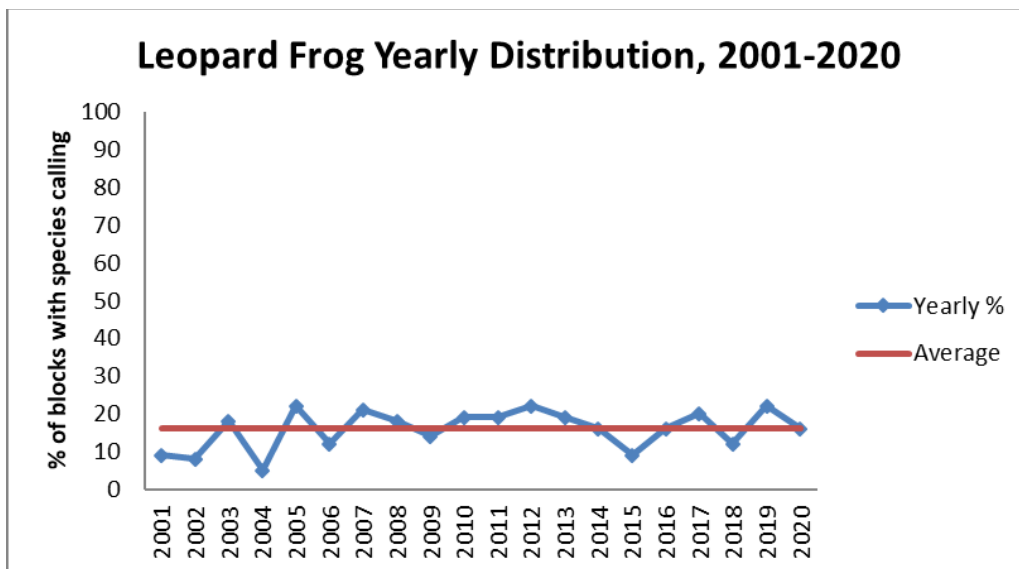


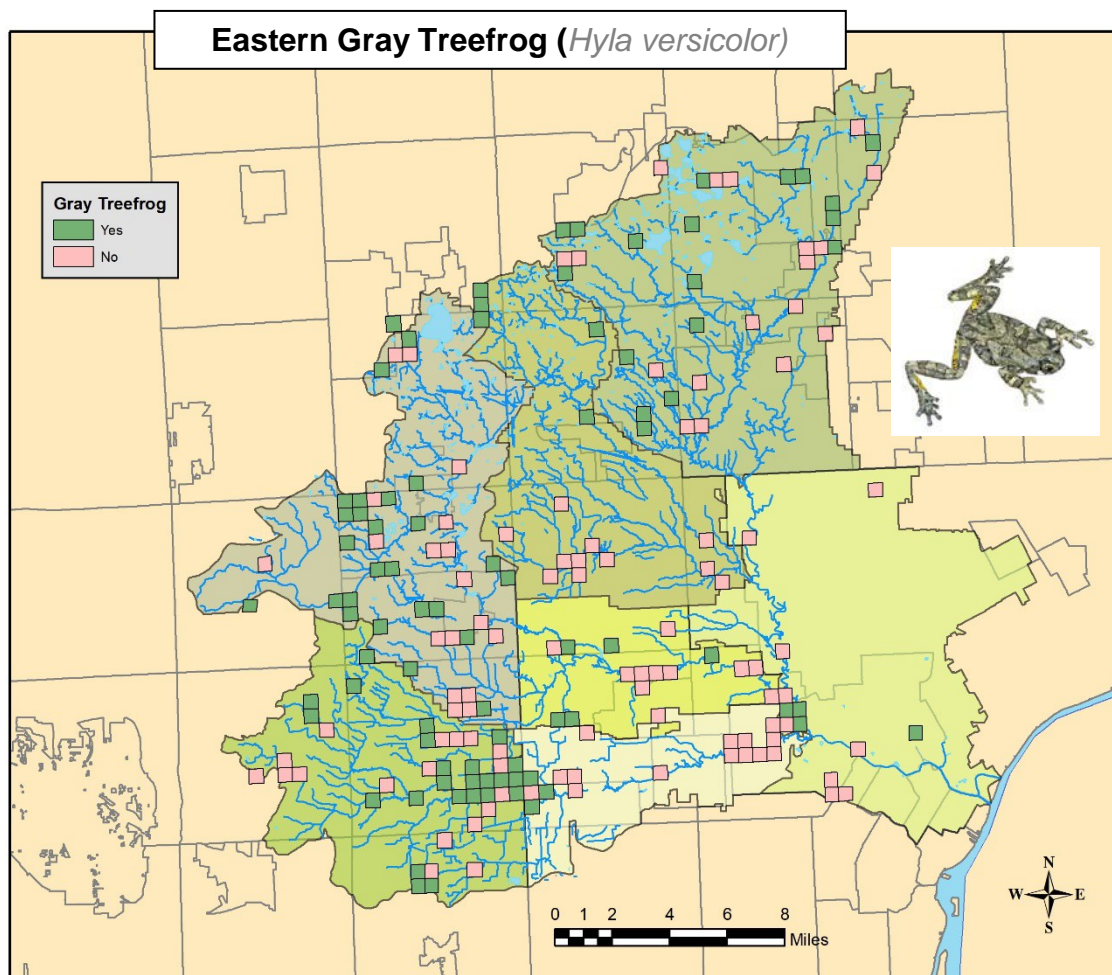
American toads were calling in 83% of all blocks which is higher than average (77%). They began calling on March 19, which is much earlier than average for the species, which is usually March 24. They were heard in all seven subwatersheds.



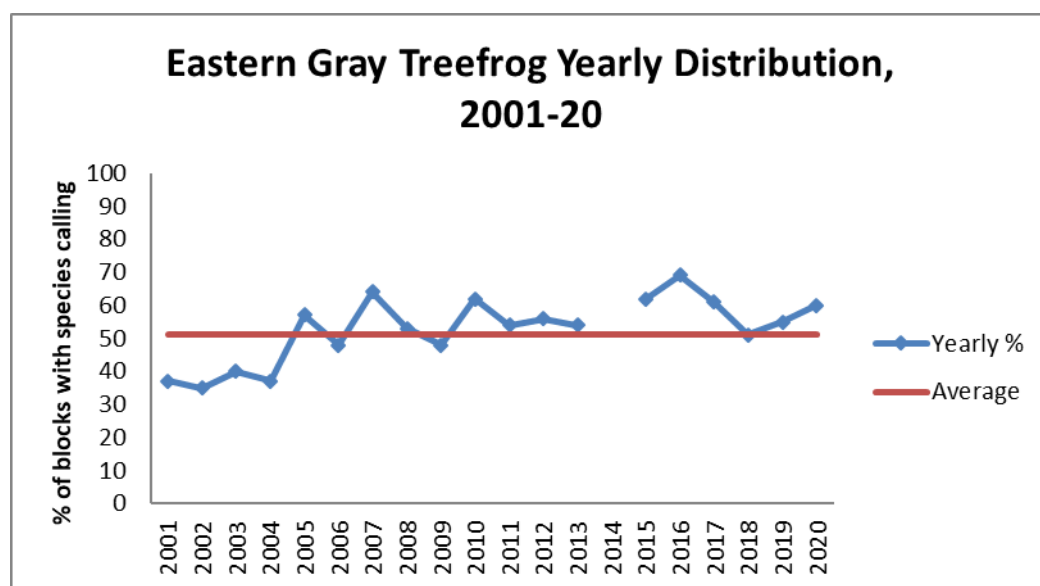


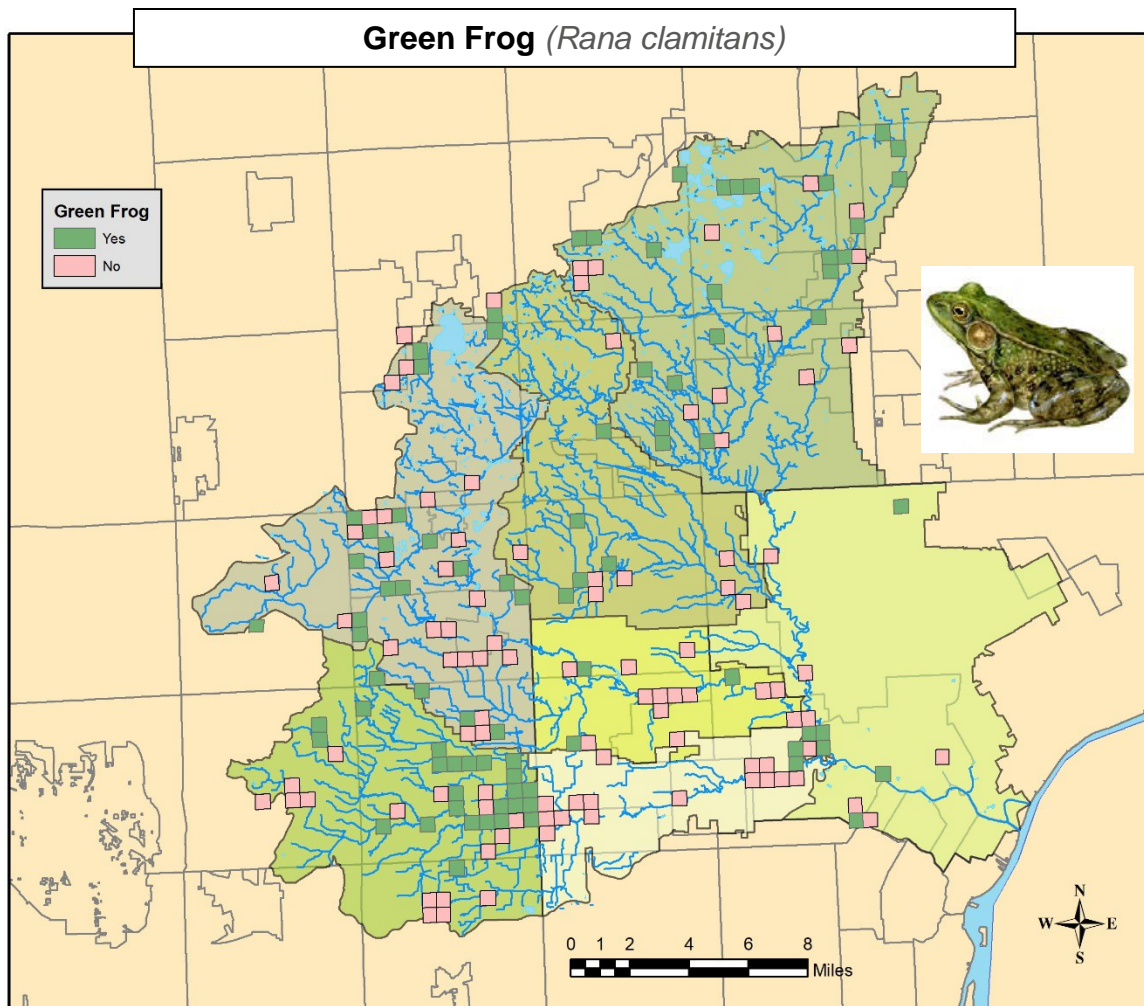
Northern Leopard Frogs, one of the most sensitive species in the watershed, were calling in 16% of all blocks, which is above average for this species (15%). They were heard in all seven subwatersheds. They started calling on April 3, which is late for the species.



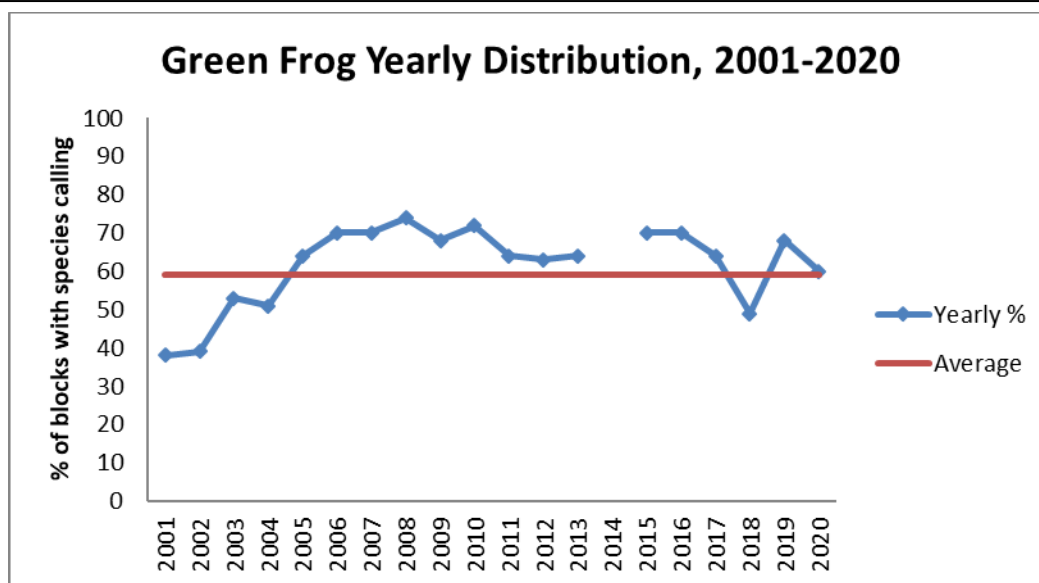


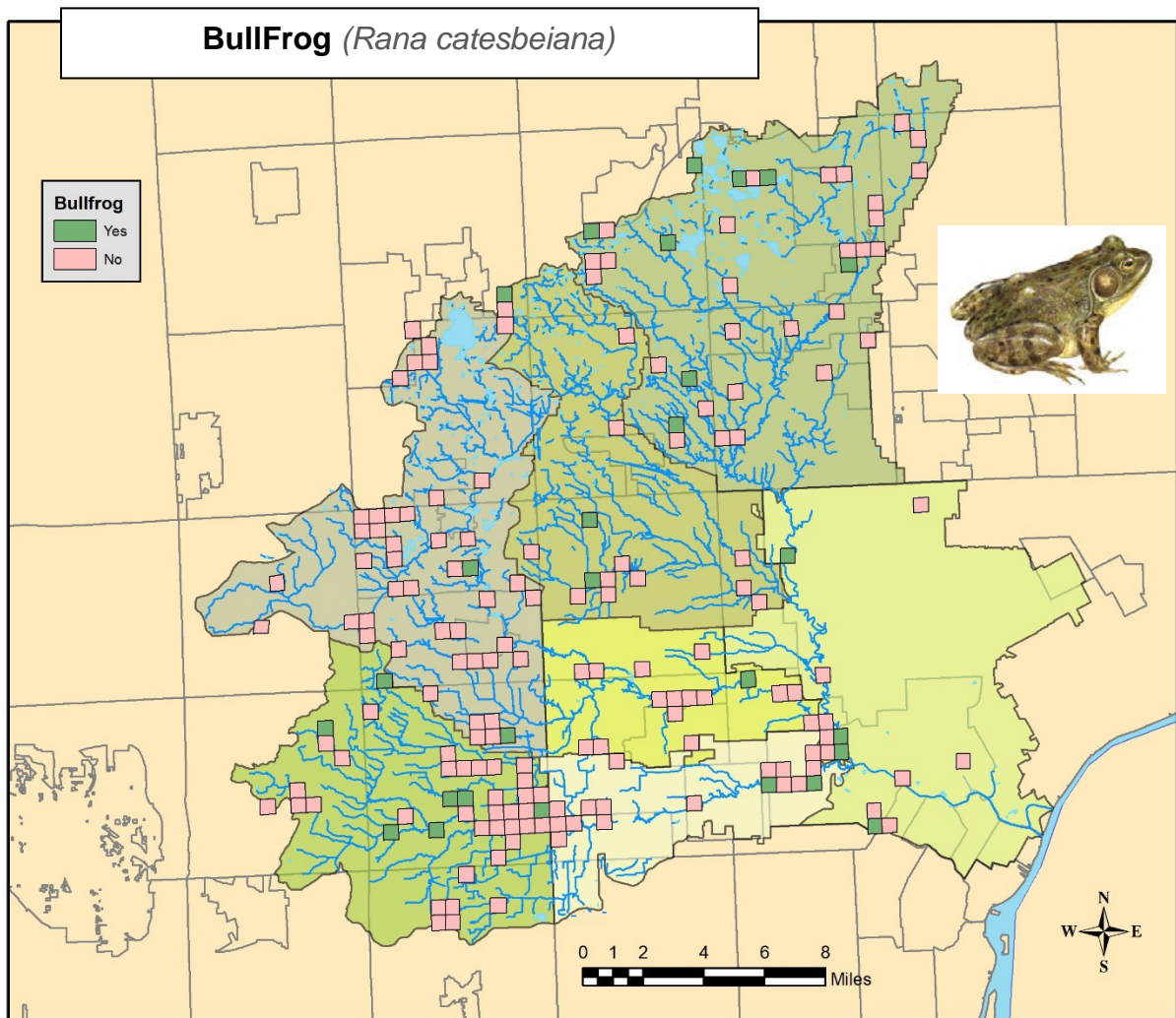
Eastern gray treefrogs were heard in 60% of all blocks, which is higher than average (51%) and increasing since 2018. They were heard in all seven subwatersheds. They began calling on April 9, which is late.



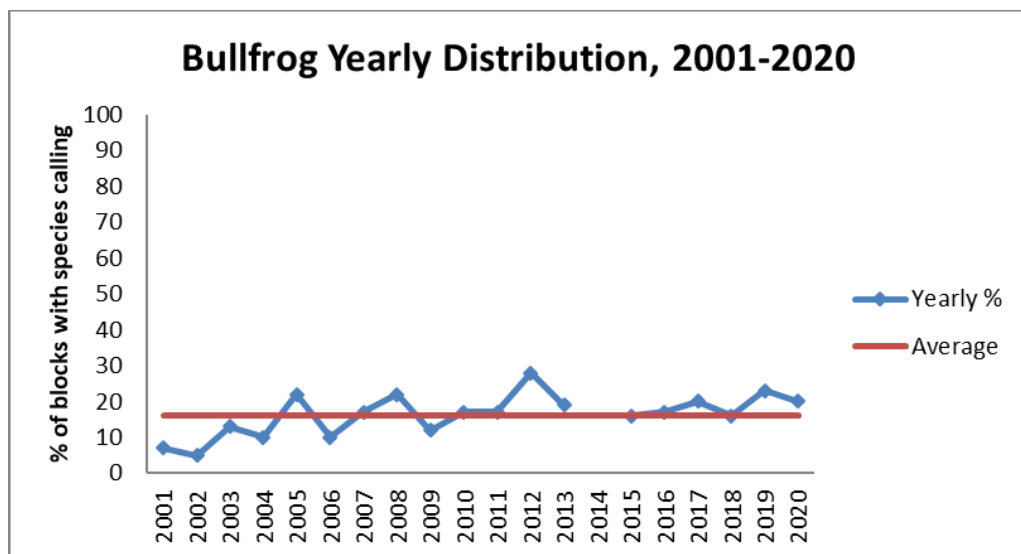


Green frogs were heard in 60% of blocks which is slightly above average (59%). They started calling on April 26, which is late. They were heard in all seven subwatersheds.





Bullfrogs were heard in 22% of blocks, which is higher than average (16%). They started calling on March 19, which is very early. They were heard in all seven subwatersheds.



2021 Frog & Toad Survey Report

2021 Rouge River Watershed Frog and Toad Survey



Friends of the Rouge
650 Church Street Suite 209, Plymouth, MI 48170
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 June. 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 the 2021 survey was provided by Bosch and the Fred A. and Barbara M. Erb Family Foundation

Summary of Volunteer Effort

The training for the 2021 Frog & Toad Survey was presented virtually due to the ongoing pandemic. It was offered in two separate sessions over two Saturdays. Part I was an introduction to the watershed, wetlands, and frogs and toads. Part II covered the specifics on how to do the survey. Splitting the sessions allowed us to open the first workshop up to a more general audience who wanted to learn about frogs and toads but not necessarily participate in the survey. We had more people participate in the virtual workshop than the in person workshops and even had a few people participate from other parts of the country. Part II was for those who had made the commitment to sign up to survey a block.

Part I, introduction, was held on Feb. 20 with 121 attendees. We presented the regular introductory slideshow and made it interactive. We quizzed volunteers on the calls. Former surveyor Kathy Ableson presented the app she designed called *Froggyvoice*. The app has simple buttons that allow you to easily play one or more frog or toad calls to check what you are hearing. Surveyors have found the app to be very useful.

Part II was held on Feb. 27 with 112 attendees. To help new volunteers envision what it would be like to survey, we invited three veteran survey teams to discuss their experience and answer questions. We included longtime surveyors as well a couple that started in 2020.

A total of 226 volunteers signed up to survey: 73 new surveyors and 153 veteran surveyors. To support the surveyors, a group listen was held at West Bloomfield Woods Nature Preserve on April 30 with 21 attendees. To further develop the listening skills of surveyors, Kathy Ableson worked with us to develop a new online quiz on the calls. A total of sixty-six volunteers took the quiz. We sent out certificates that included the level they reached: "Experienced" or "Master."

Volunteers were assigned a total of 224 survey blocks. Data was received for 147 blocks from 143 volunteers who contributed 651 hours of time. One hundred and 30 blocks were fully surveyed.

2021 Survey Results

For the 130 blocks that were fully surveyed, an average of 3.3 species was heard per block (Table 1). Eight blocks that were fully surveyed had no species calling (map p. 4). American toads, green frogs and gray treefrogs were the most commonly heard species while leopard frogs were the least commonly heard followed by bullfrogs and wood frogs. (Table 2). Most of the early calling species were heard in fewer blocks this spring while the later calling species including gray treefrogs, green frogs and bullfrogs were heard in more blocks.

The first frogs or toads any surveyors heard in 2021 were on March 9: Midland chorus frogs calling in Canton and Novi. This was followed by spring peepers March 10 at Carpenter Lake in Southfield, wood frogs March 11 in Superior Township, and northern leopard frogs March 29 in Rouge Park in Detroit. American toads finally started calling in Farmington Hills on April 4 with many reports elsewhere April 6 and 7th.

Five of the seven subwatersheds had all eight species calling in at least one block. The Lower 1 had the highest species diversity at 3.7 species per block, followed by the Middle 1 at 3.6. The Middle 3 had the lowest percentage of species at 0.78 heard per block, followed by the Lower 2 at 1.6. The more sensitive wood frogs and leopard frogs were both missing from these subwatersheds.

2021 Weather

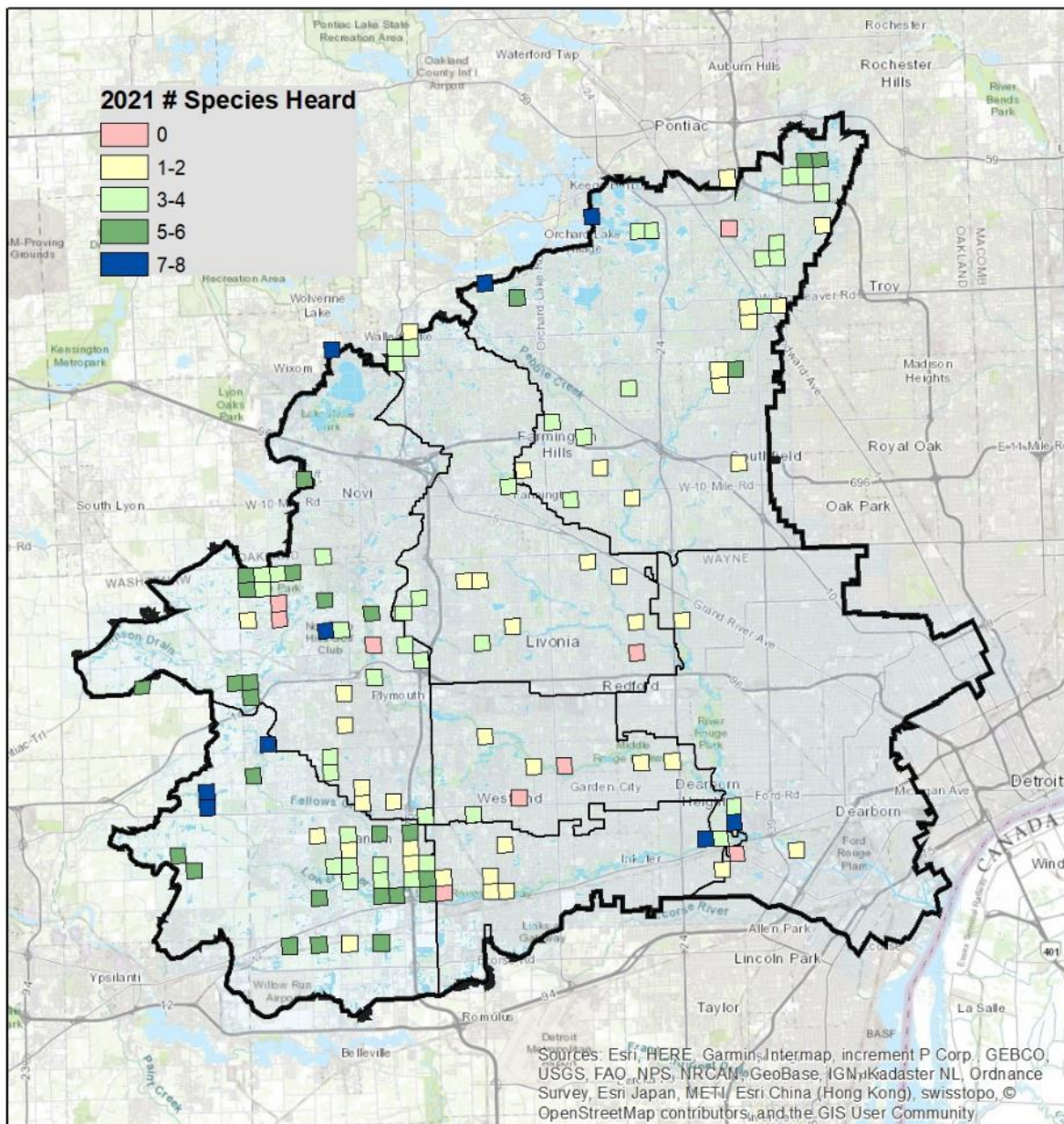
The spring of 2021 began very cold and very dry with so little rain or snowmelt that many vernal ponds were dry. This changed at the end of June when a cycle of record-breaking rainfall started and lasted into the fall with at least eight large rain events that caused flooding. The early calling species were all heard in lower numbers this year. Since these early spring frogs rely on vernal ponds, the spring drought was a likely cause. Several surveyors reported their vernal ponds were completely dry. Species that use permanent ponds like gray treefrogs, green frogs and bullfrogs were heard in higher numbers and did not seem harmed by the flooding or dry spring. They could experience lower productivity if their eggs and tadpoles were washed downstream but this will not be apparent until next year.

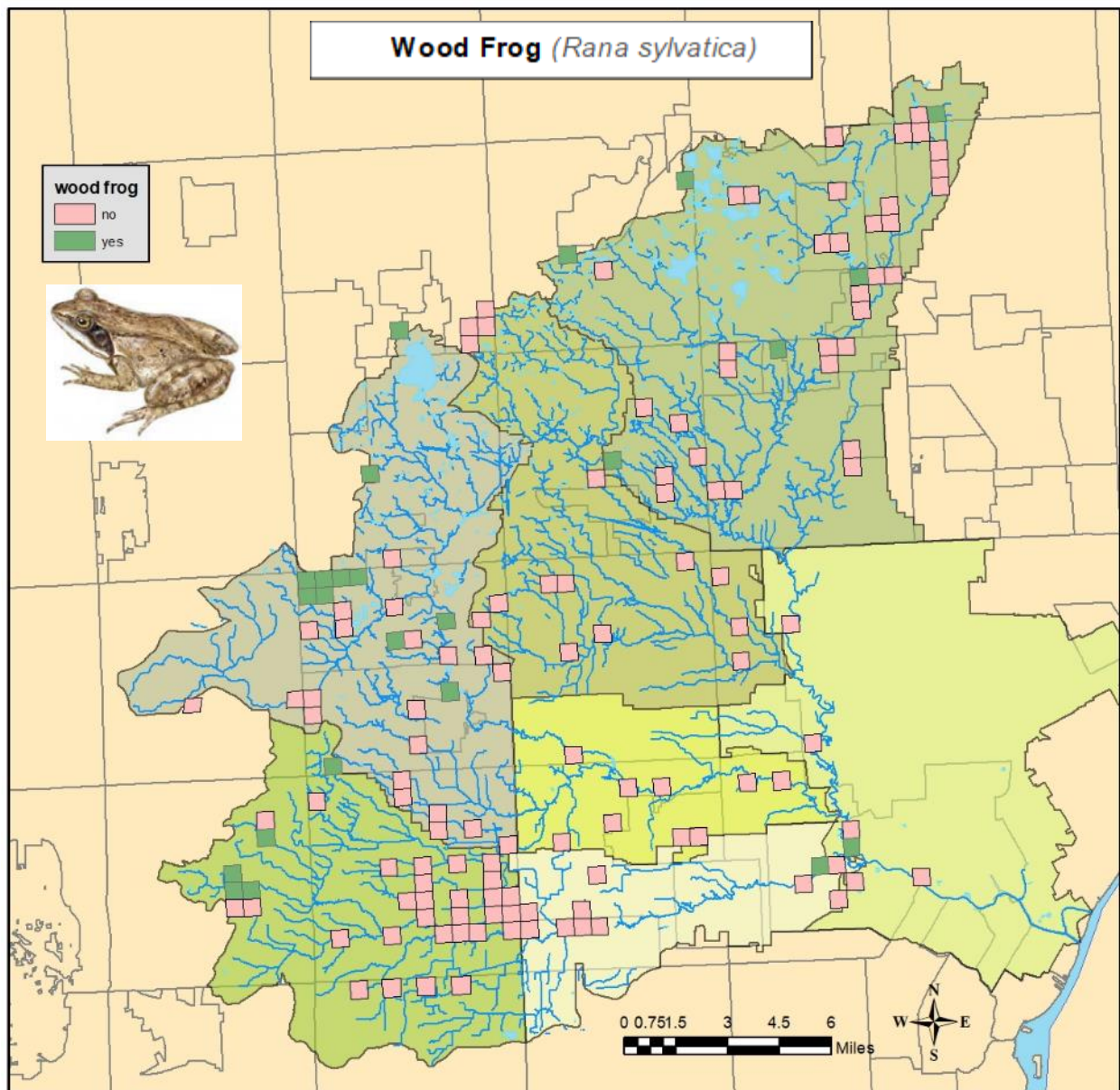
Table 1: Blocks by Subwatershed					
subwatershed	# blocks surveyed	avg. # species heard per block	highest # species heard in one block	# species in Subwatershed	species not heard
Lower 1	34	3.7	8	8	
Lower 2	12	1.6	8	8	
Main 1-2	39	2.6	8	8	
Main 3-4	5	2.8	8	8	
Middle 1	32	3.6	7	8	
Middle 3	9	0.78	3	3	Wood, chorus, and leopard frog, bullfrog
Upper	15	2.1	3	5	Wood, chorus and leopard frog
Total	146	3.3			

Table 2: Percent of blocks in which species was heard, 2000-2021																							
Species	average	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
Wood Frog	24%	18%	18%	21%	28%	23%	33%	24%	26%	25%	30%	25%	27%	27%	24%	29%	19%	29%	19%	23%	20%	17%	14%
Midland Chorus Frog	49%	42%	53%	55%	52%	48%	55%	46%	45%	54%	48%	39%	49%	46%	47%	57%	49%	57%	46%	48%	52%	49%	50%
Northern Spring Peeper	49%	41%	49%	44%	56%	48%	54%	42%	40%	51%	56%	50%	49%	46%	56%	62%	55%	57%	41%	45%	50%	47%	48%
American Toad	77%	76%	85%	86%	82%	85%	86%	85%	79%	77%	79%	80%	88%	84%	89%	87%	78%	74%	61%	62%	71%	58%	49%
Northern Leopard Frog	16%	15%	18%	21%	16%	20%	16%	9%	16%	19%	22%	19%	19%	14%	18%	21%	12%	22%	5%	18%	8%	9%	5%
Gray Treefrog	52%	59%	63%	53%	64%	61%	69%	39%		54%	56%	54%	62%	48%	53%	64%	48%	57%	37%	40%	35%	37%	47%
Green Frog	60%	65%	63%	66%	65%	64%	70%	70%		64%	63%	64%	72%	68%	74%	70%	70%	64%	51%	53%	39%	38%	15%
Bullfrog	16%	18%	22%	22%	23%	20%	17%	16%		19%	28%	17%	17%	12%	22%	17%	10%	22%	10%	13%	5%	7%	0%

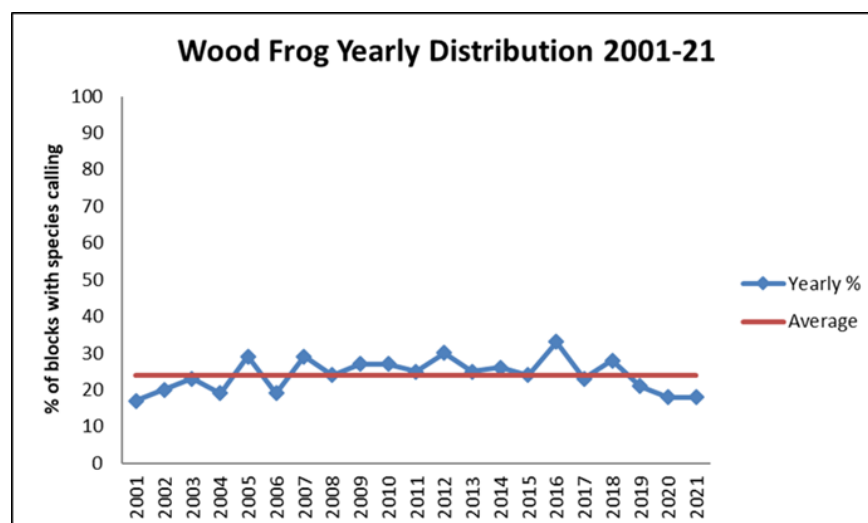
2021 Diversity

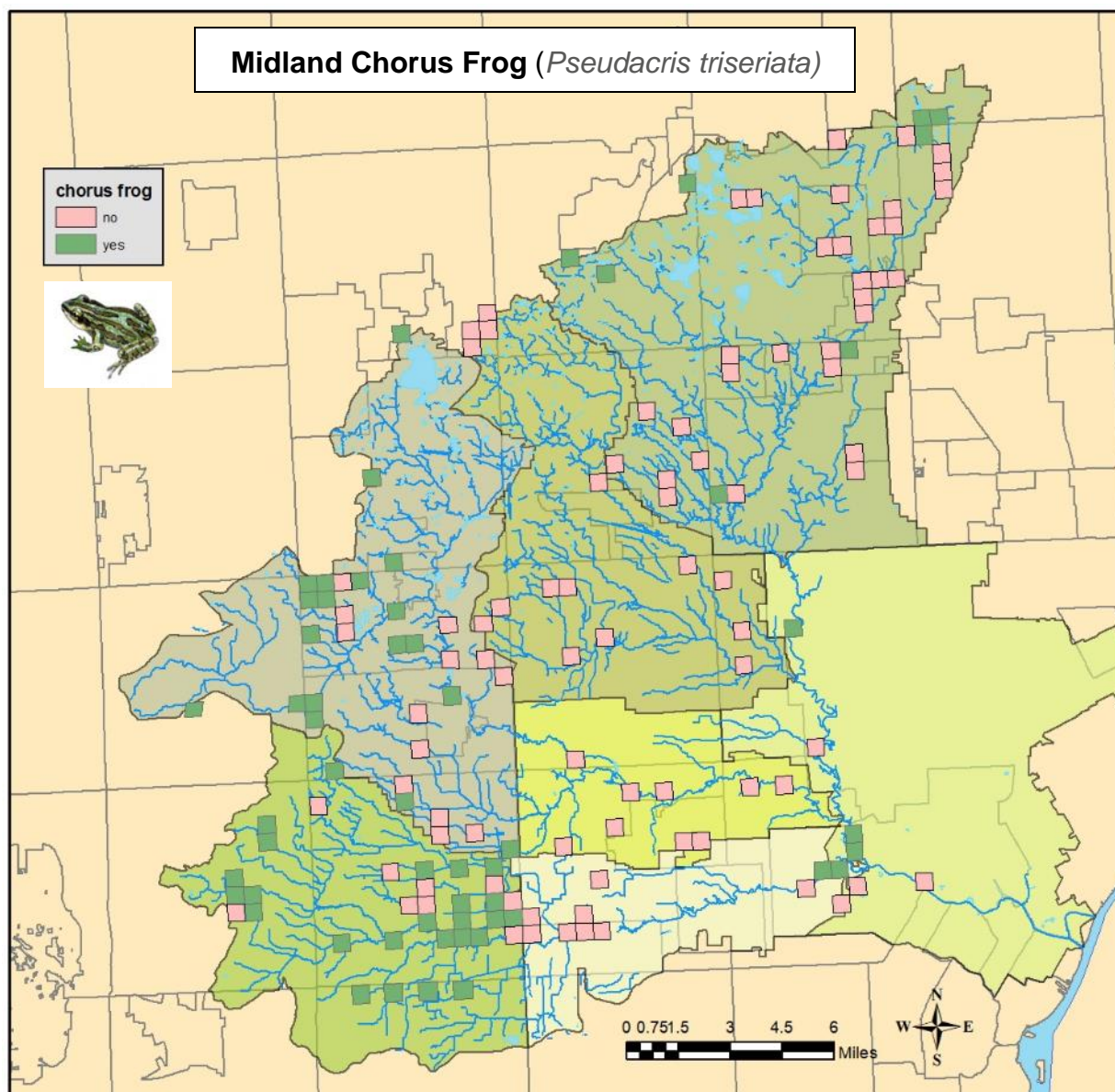
The map below shows the number of species heard for all blocks that were fully surveyed (had observations throughout the season). Blocks with just a few observations are not shown here. The headwaters of the Main, Middle and Lower and the protected natural areas near the University of Michigan-Dearborn are home to a higher number of species. Eight blocks had no frogs or toads calling despite the surveyor visiting and listening at the site throughout the season.



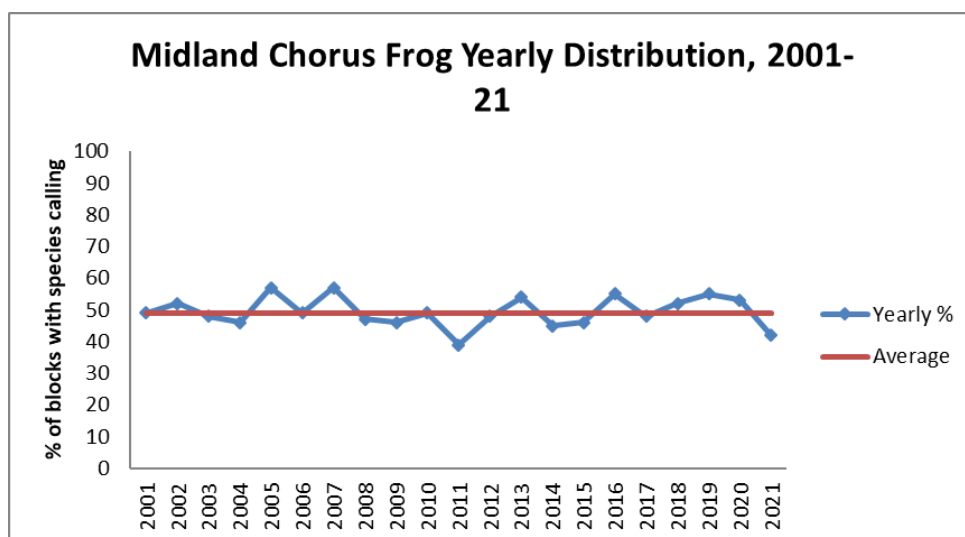


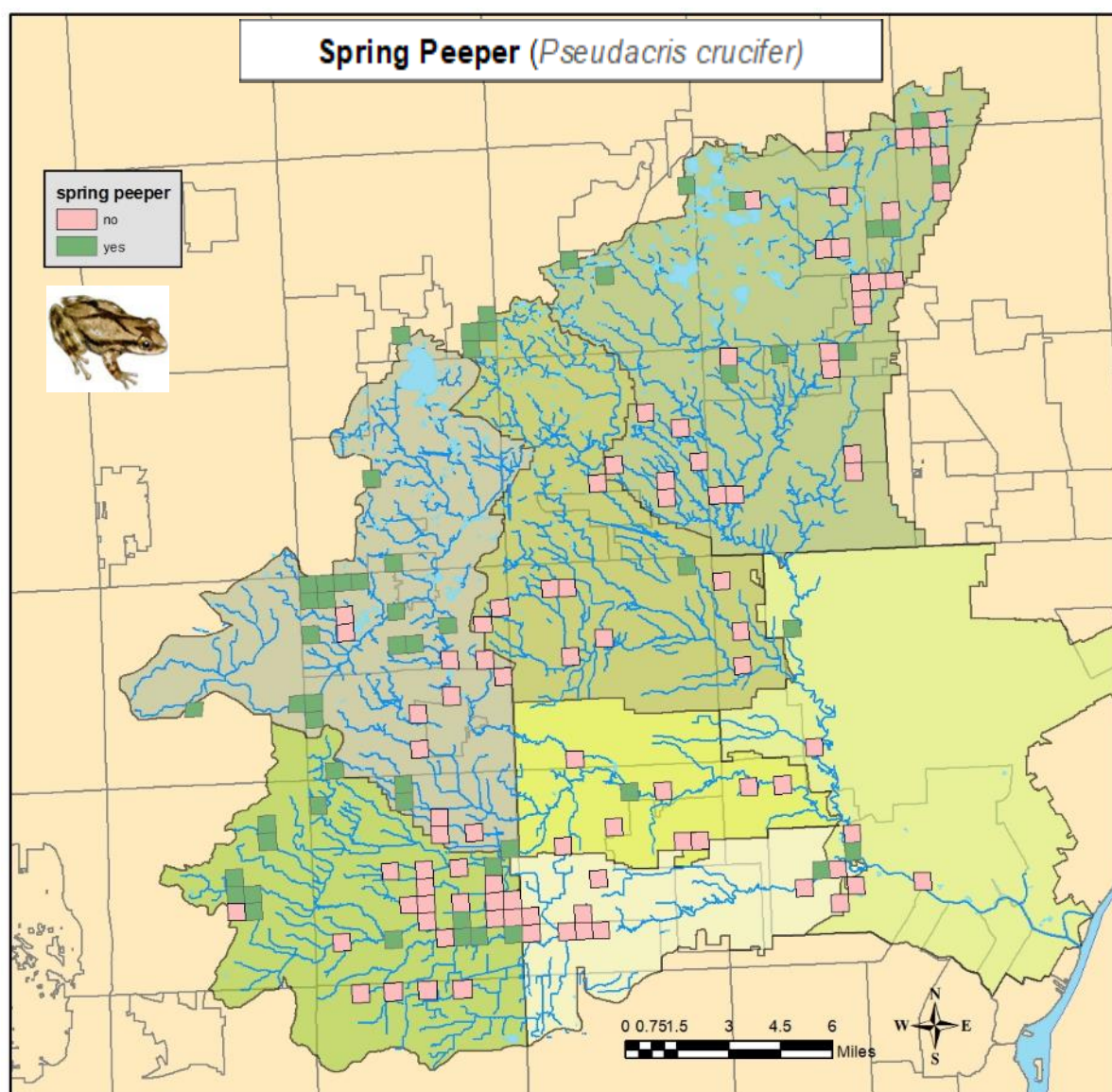
Wood frogs were heard in 18% of all survey blocks, lower than average for the species (24%). They were not heard in the Upper or Middle 3 subwatersheds. Wood frog numbers have been lower than average for the past three years.



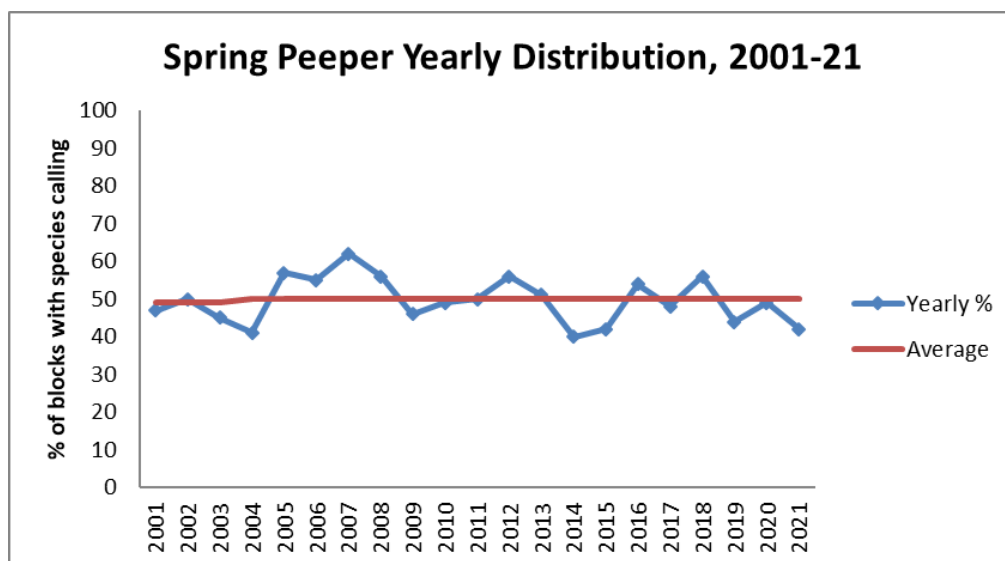


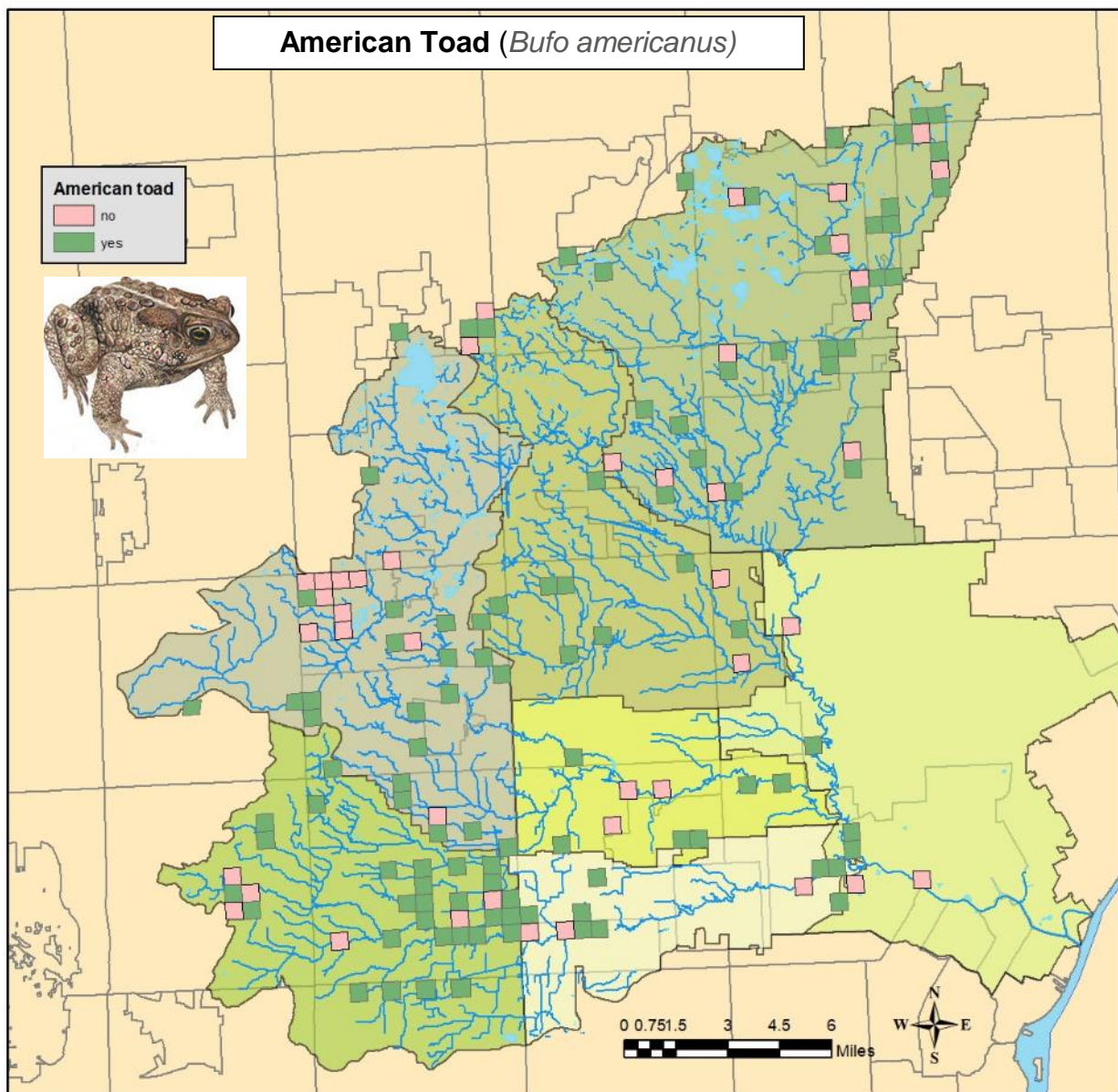
Midland chorus frogs (formerly called western chorus frogs) were heard in 42% of all survey blocks. This is below average (49%) for the species. Chorus frogs were not heard in the Upper and Middle 3 subwatersheds and were heard in fewer blocks than last year.



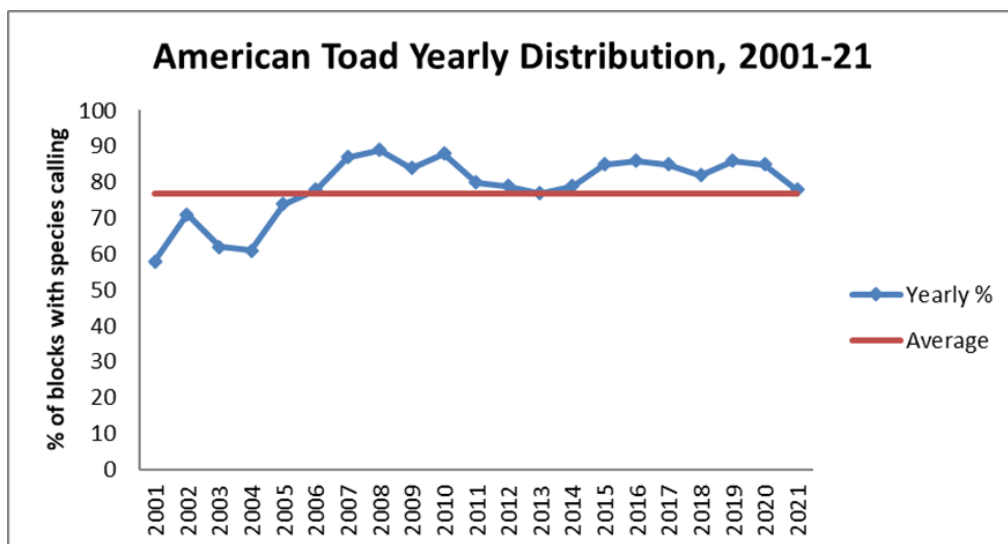


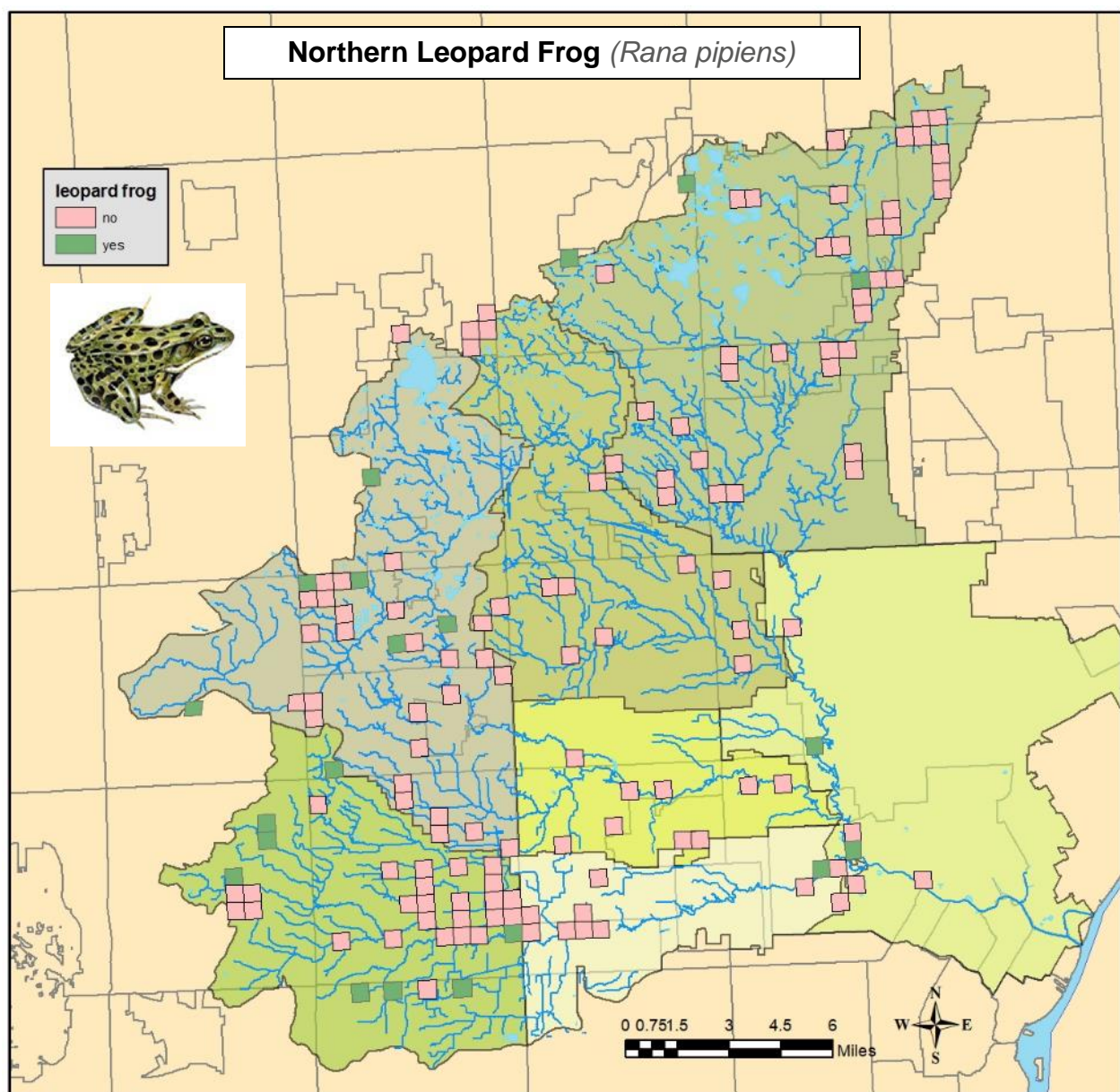
Spring peepers were calling in 41% of the blocks, below average (49%). They were heard in all seven subwatersheds but numbers declined this year.



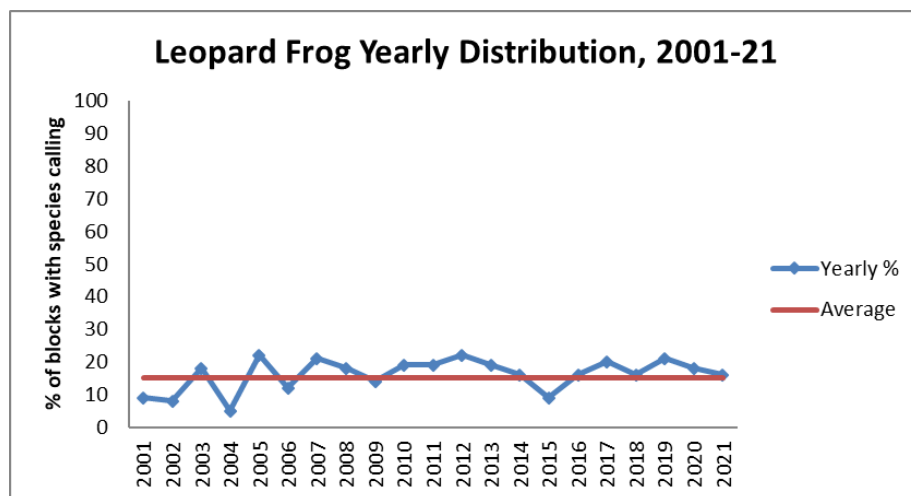


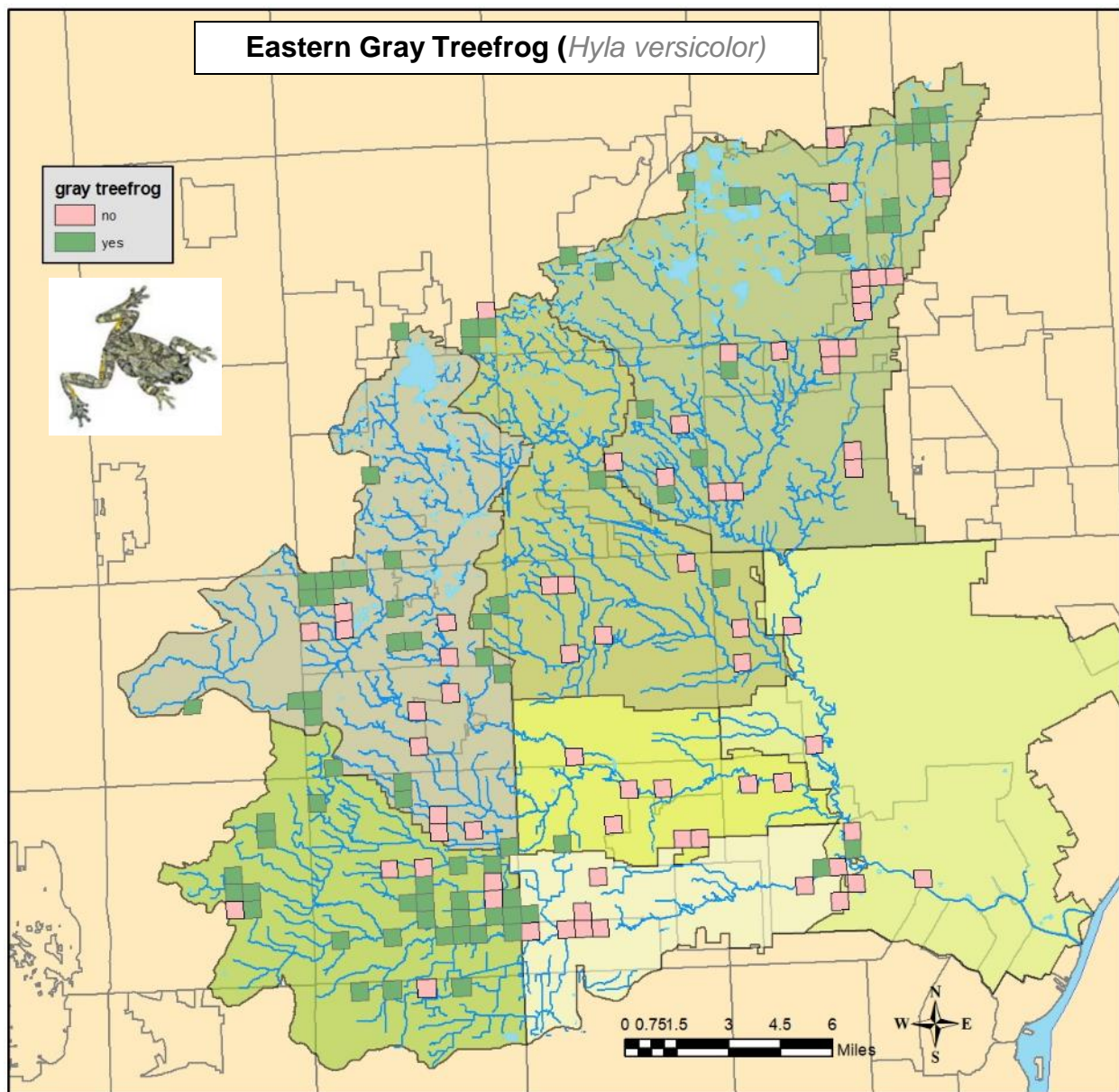
American toads were calling in 76% of all blocks which just below average (77%). This is the lowest percentage of blocks with toads calling since 2005. They were heard in all seven subwatersheds.



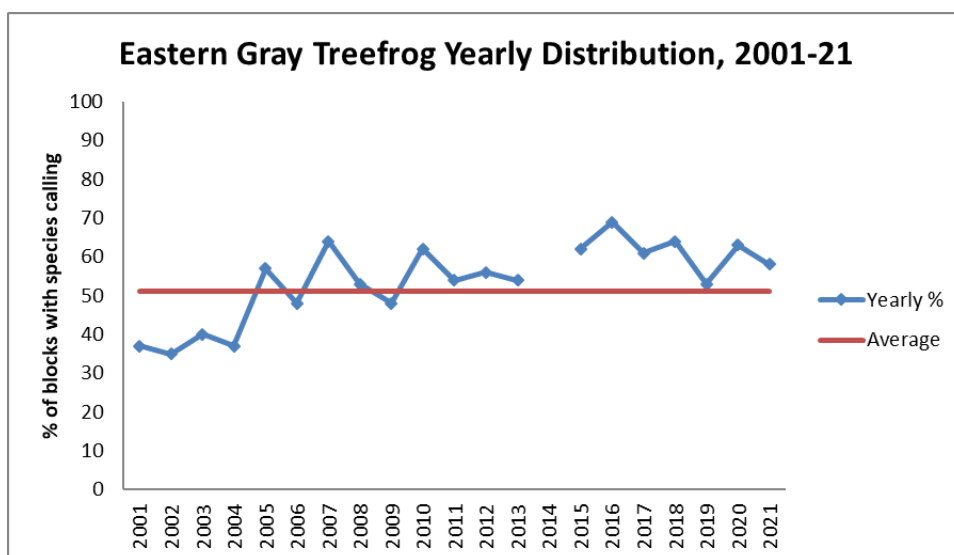


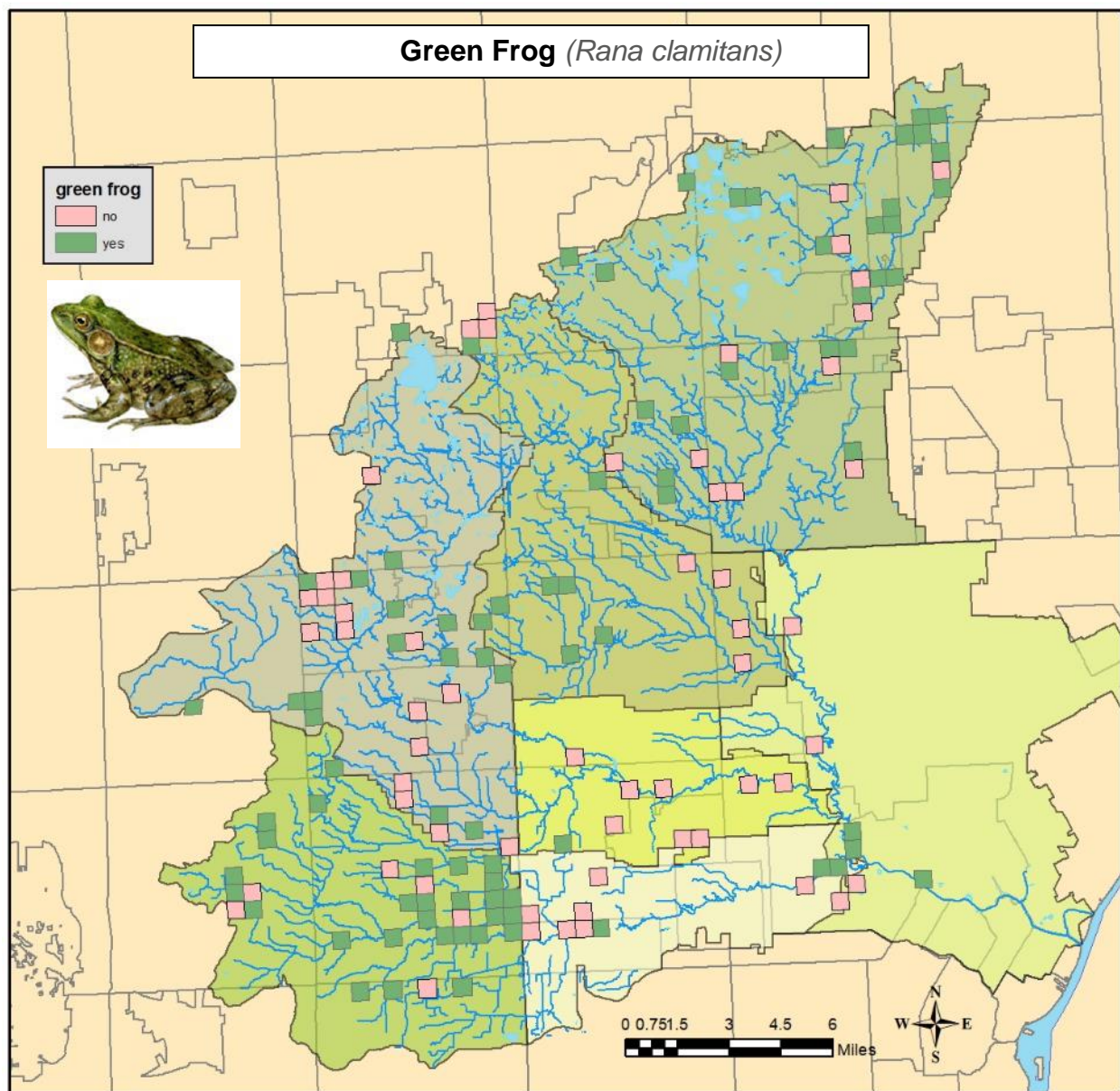
Northern Leopard Frogs, one of the most sensitive species in the watershed, were calling in 15% of all blocks, which is average for this species (16%). They were not heard in the Upper or Middle 3 subwatersheds.



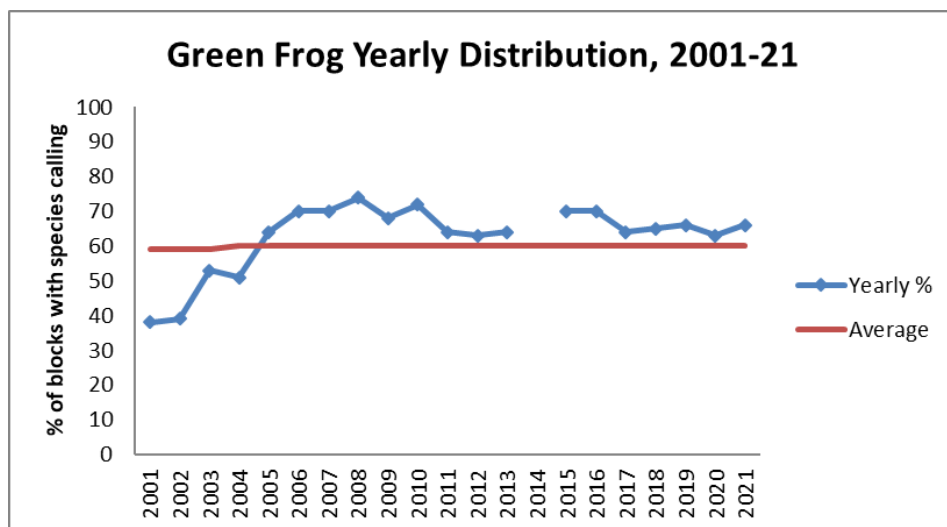


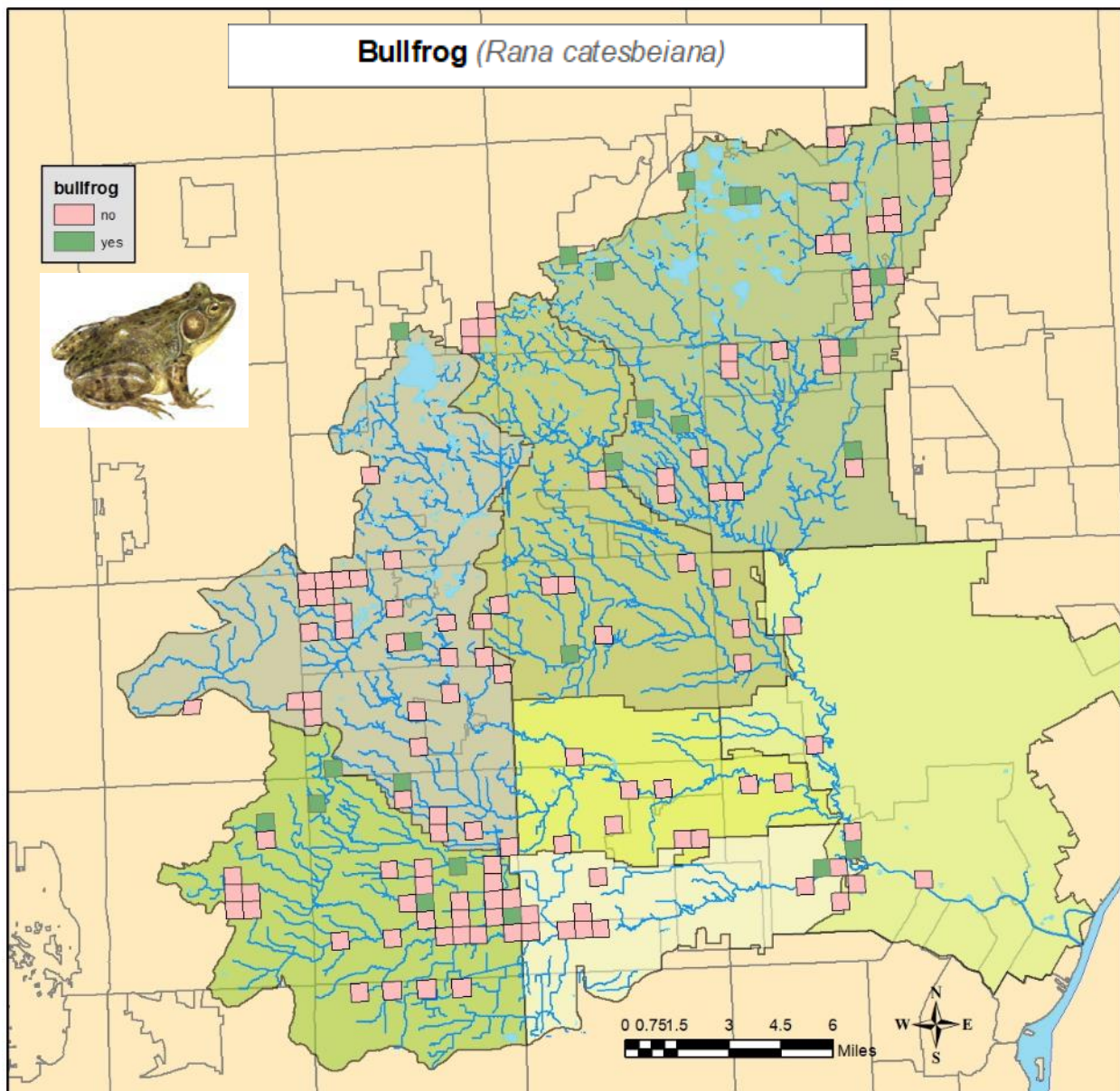
Eastern gray treefrogs were heard in 59% of all blocks, which is higher than average (52%). They were heard in all seven subwatersheds.



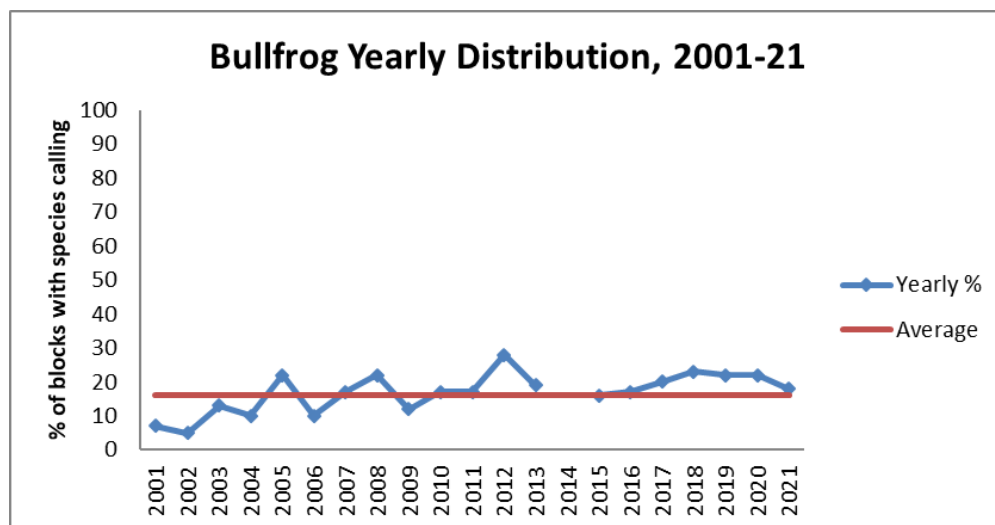


Green frogs were heard in 65% of blocks which is slightly above average (60%). They were heard in all seven subwatersheds.





Bullfrogs were heard in 18% of blocks, which is higher than average (16%). They were not heard in the Middle 3 subwatershed.



2021 FOTR ARC Annual Report

2020

Annual Report for the Alliance of Rouge Communities



Friends of the Rouge

January 1, 2020 through

December 31, 2020

**FRIENDS OF THE ROUGE
ANNUAL REPORT 2020
(January 1, 2020 through December 31, 2020)
For the
ALLIANCE OF ROUGE COMMUNITIES**

EDUCATION

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OUTREACH

Local and Regional Outreach	Pages 14-16
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Friends of the Rouge 2020 Annual Report for ARC
EDUCATION
January 1, 2020 through December 31, 2020

Schools - Spring Monitoring 2020				
Community	School	# Teachers	# Students	Monitoring Location
1 Dearborn Heights	Crestwood High School	1	0	Parr Recreation Area, Wayne Co Parks/Hines Dr, Dearborn Heights
TOTALS		1	0	

Schools - Fall Monitoring 2020				
Community	School	# Teachers	# Students	Monitoring Location
1 Allen Park	Inter-City Baptist High School	1	26	Ford Field Park, Dearborn
2 Dearborn Heights	Crestwood High School	1	5	Parr Recreation Area, Wayne Co Parks/Hines Dr, Dearborn Heights
3 Plymouth	Steppingstone School	2	5	Riverside Park, Wayne Co Parks/Hines Dr, Plymouth
4 Westland	Huron Valley Lutheran High School	1	12	Nankin Mill, Wayne Co Parks/Hines Dr, Westland
TOTALS		5	48	

Workshop - Advanced Chemical Training			
March 7, 2020 - 9:00AM-1:30PM FOTR Office, Plymouth			
Community	Affiliation	# Teachers	# Volunteers
1 Allen Park	Eastern Michigan University		1
2 Livonia	Volunteer		1
	Schoolcraft College		1
3 Plymouth	University of Michigan-Dearborn		1
TOTALS		0	4

Workshop - Bug Identification & Sampling Techniques
March 21, 2020 / April 4, 2020 / September 2020 - CANCELLED (COVID)

Workshop - Summer Institute
August 3-7, & 10 2020 - CANCELLED (COVID)

Student Symposium
November 13, 2020 - CANCELLED (COVID)

Lessons, Water Festivals, & Conferences - 2020
Lesson
N/A
Partner Event
N/A
Conference
N/A

Friends of the Rouge
2020 Report for ARC
MONITORING - BENTHIC MACROINVERTEBRATE SAMPLING
January 1, 2020 through December 31, 2020

Event	Stonefly Refresher	Stonefly Search	Spring Sampling	Fall Bug Hunt	UM-D student sampling	Fall Additional Sites
Date	1/11/2020	1/25/2020	5/18/2020	10/17/2020	10/10/2020	10/15, 10/19, 10/20
Time	10am-12pm	9am-3pm	10am-11am	9am-4pm	10am-1pm	10am-2pm
City/Township	Plymouth	Plymouth	Dearborn Heights	Plymouth	Farmington	Northville, Novi
Location	FOTR Lab	Arts & Cultural Center	Facebook Live (participants are viewers)	PARC	Shiawassee Park	
Attendee Residency						
Allen Park		1				
Ann Arbor		2		4		
Belleville						
Beverly Hills		2		1		
Birmingham						
Bloomfield Hills		1		1		
Brighton						
Brownstown Twp						
Canton	1	2		1		
Commerce	1	1		1		
Dearborn	1	4			1	
Dearborn Heights	1	3		3	1	
Detroit		1		2	1	
Erie						
Farmington		1		1	1	
Farmington Hills		2		3		
Ferndale						
Garden City		1				
Grosse Pte		1				
Grosse Pointe Pk						
Hamtramck		1		1		1
Imlay City				1		
Lake Orion						1
Lansing		1				
Lincoln Park						
Livonia	1	5		9		1
Mayville				1		

Friends of the Rouge
2020 Report for ARC
MONITORING - BENTHIC MACROINVERTEBRATE SAMPLING
January 1, 2020 through December 31, 2020

Event	Stonefly Refresher	Stonefly Search	Spring Sampling	Fall Bug Hunt	UM-D student sampling	Fall Additional Sites
Date	1/11/2020	1/25/2020	5/18/2020	10/17/2020	10/10/2020	10/15, 10/19, 10/20
Time	10am-12pm	9am-3pm	10am-11am	9am-4pm	10am-1pm	10am-2pm
City/Township	Plymouth	Plymouth	Dearborn Heights	Plymouth	Farmington	Northville, Novi
Location	FOTR Lab	Arts & Cultural Center	Facebook Live (participants are viewers)	PARC	Shiawassee Park	
Attendee Residency						
Mount Clemens						
New Baltimore					1	
Northville		5		4		
Novi				3		
Oak Park				1		
Plymouth	4	6		4		6
Redford	2	7		2	1	
Richmond						
Royal Oak		1			1	
Saint Clair Shores		2				
Shelby Twp		1				
Southfield						
South Lyon		2				
Sterling Heights		1				
Taylor						
Troy		1				
Warren		2				
Waterford						
Wayne				2		
West Bloomfield				1		
Westland	3	6		5		1
Wixom				2		
Wyandotte	2					
Unknown		2	1300	5	9	
TOTALS	16	65	1300	58	16	10

Friends of the Rouge
2020 Report for ARC
MONITORING - FROG AND TOAD SURVEY
January 1, 2020 through December 31, 2020

Event	Frog & Toad Survey Training Workshop	Self-Train after Plymoth Workshop Cancelled	Self-Train	Webinar	Frog & Toad Survey Veterans	Save the Frogs Presentation
Date	3/7/2020			4/8/2020	March thru June	4/24/2020
Time	2 hours	2 hours	2 hours	1 hour	after dark	4:00 PM
City/Township	Livonia			online	same as home	virtual
Location	Library			Zoom		
Allen Park	1					
Ann Arbor			4			
Belleville	1				1	
Berkley						
Beverly Hills					2	
Birmingham	3				5	
Bloomfield Hills			2	1	9	
Bloomfield Twp						
Brownstown Twp						
Canton	8	12	1	2	19	
Carleton		1				
Dearborn	8	4		2	10	
Dearborn Heights	3				2	
Detroit	3	2			2	
Eastpointe						
Farmington	2				2	
Farmington Hills	1		3		6	
Ferndale				1	4	
Fenton		1		1		
Franklin	1					
Garden City	2	3		1	1	
Hamtramck					1	
Hazel Park						
Huntington Woods					2	
Lincoln Park		1				
Livonia	11	6			6	
Melvindale					1	
Milford		1		1		
Monroe		1				
New Boston						
New Hudson						
Northville	3	4		2	11	
Novi		2			2	
Oak Park	2				1	
Plymouth	6	11		1	4	

Friends of the Rouge
2020 Report for ARC
MONITORING - FROG AND TOAD SURVEY
January 1, 2020 through December 31, 2020

Event	Frog & Toad Survey Training Workshop	Self-Train after Plymoth Workshop Cancelled	Self-Train	Webinar	Frog & Toad Survey Veterans	Save the Frogs Presentation
Date	3/7/2020			4/8/2020	March thru June	4/24/2020
Time	2 hours	2 hours	2 hours	1 hour	after dark	4:00 PM
City/Township	Livonia			online	same as home	virtual
Location	Library			Zoom		
Plymouth Township						
Redford	10	7			6	
Riverview						
Royal Oak	1			1	6	
Romulus	1					
Saint Clair Shores	2					
South Lyon	1					
Southfield					1	
Southgate					1	
Sterling Heights	1					
Troy	1				4	
Trenton						
Walled Lake						
Waterford					2	
Wayne					3	
West Bloomfield			2	3	5	
Westland	6	4			4	
Wyandotte		1			2	
Ypsilanti	1					
Unknown				1	1	515
TOTALS	79	61	12	17	126	515

2020 Blocks Surveyed	
Subwatershed	# blocks
Lower 1	42
Lower 2	15
Main 1-2	36
Main 3-4	13
Middle 1	45
Middle 3	16
Upper	16
TOTAL	183

Friends of the Rouge
2020 Report for ARC
MONITORING - FISH SURVEYS
January 1, 2020 through December 31, 2020

Fish Surveys													
Date	7/17/2020	7/20/2020	7/24/20	7/29/20	7/30/20	7/31/20	8/6/20	8/7/20	8/19/20	8/20/20	8/21/20	10/10/20	
City/Township	Northville	West Bloomfield	Bloomfield Twp	Farmington Hills	Southfield	Detroit	Canton	Dearborn	Canton	Wayne	Inkster/Dearborn	Farmington	
Attendee Residency													TOTALS
Beverly Hills	1	1	1	1	1	1	1	1	1	1	1	1	12
Canton													0
Dearborn													0
Dearborn Heights	1	1	1	1	1	1	1	1	1	1	1	1	12
Farmington													0
Ferndale													0
New Baltimore	1	1	1	1	1	1	1	1	1	1	1	1	12
Plymouth													0
Northville													0
Royal Oak	1	1	1	1	1	1	1	1	1	1	1	1	12
Sterling Heights	1	1	1	1	1	1	1	1	1	1	1		11
Westland													0
Unknown													0
TOTALS	5	5	5	5	5	5	5	5	5	5	5	4	59

Friends of the Rouge 2020 Annual Report for ARC
ROUGE RESCUE
January 1, 2020 through December 31, 2020

Date	Rouge Rescue Site Coordinator Meetings	Location	City	Attendance
3/18/2020	Rouge Rescue Kick-off Meeting Call	Via Conference Call	-	26

Date	Rouge Rescue Work Sites	Sponsoring Community or Organization	City/Twp/Village	2020 Participation
3/7/2020	Smith Elementary School/ Byron Creek	Plymouth YMCA, City of Plymouth	Plymouth	13
4/1/2020 - 6/1/2020	Rouge Rescue ONLINE via Wespire	Bosch, Community Financial, National Kidney Foundation of Michigan, Waste Manangement, Roeper School, Erb Family Foundation	-	324
5/16/2020	Fair Lane, Henery Ford Estate	Fair Lane Estate	Dearborn	1 (staff member)
5/16/2020	Tonquish Creek (Holliday Nature Preserve)	Holliday Nature Preserve Association	Westland	4
5/16/2020	Lola Valley	-	Redford Twp	15
5/13/2020	Berberian Woods	City of Southfield	Southfield	7
6/25/2020	Merriman Hollow	-	Westland	5
			Total Participation	355

Volunteer Residency	
City/Township	Total Number of Volunteers
Allen Park	2
Auburn Hills	1
Birmingham	6
Beverly Hills	4
Bloomfield Hills	2
Bloomfield twp	3
Canton	18
Commerce Twp	1
Dearborn	96
Dearborn Heights	5
Detroit	19
Farmington	4
Farmington Hills	23
Garden City	2
Livonia	39
Northville	9
Novi	6
Oak Park	1
Plymouth	23
Redford	24
Rochester Hills	2
Southfield	19
Troy	3
Walled Lake	1
Wayne	2
West Bloomfield	5
Westland	18
Wixom	1
Ypsilanti	3
Unknown/ not stated	20

Rouge Rescue 2020 was adapted due to Covid-19 to an online learning and action platform for volunteers through April and May. Some individuals and small groups got together for restoration or cleanup activities on their own.

**Friends of the Rouge 2020 Annual Report for ARC
RESTORATION
January 1, 2020 through December 31, 2020**

Rain Gardens to the Rescue (RGttr)					
Date	Event	City	Location	Audience	Participation
6/20/2021	RGttr Workshop Series	Detroit	Virtual Zoom Course	Detroit residents	
	6/1/2020 Workshop 1 - Introduction to Rain Gardens				19
	6/8/2020 Workshop 2 - Native Plants, Site Conditions and Garden Sizing				17
	6/15/2020 Workshop 3 - Rain Garden Design				12
	6/22/2020 Workshop 4 - Just Weed It! Maintenance Workshop				13
	6/29/2020 Workshop 5 - Design Reveal				12
8/20/2021	RGttr Installations 11 sites, listed below)	Detroit	Multiple locations, Detroit	Detroit residents and their friends and family	
	8/13/2020 Rain Garden Installation_ Joseph Campau		Residential site		16
	8/15/2020 Rain Garden Installation_ Longfellow		Residential site		11
	8/15/2020 Rain Garden Installation_ Hartford		Residential site		6
	8/18/2020 Rain Garden Installation_ W Grand Blvd		Residential site		6
	8/22/2020 Rain Garden Installation_ Seyburn		Residential site		4
	8/22/2020 Rain Garden Installation_ King		Residential site		7
	8/27/2020 Rain Garden Installation_ Taylor		Residential site		8
	8/29/2020 Rain Garden Installation_ Chicago Blvd		Residential site		6
	8/29/2020 Rain Garden Installation_ Clairmount		Public site		6
	Leadership Driven Rain Garden Installations				
	6/17/2020 Rain Garden Installatio_ Birwood		Residential site		8
	10/25/2020 Rain Garden Installation_ Voices for Earth Justice		Semipublic site		6
12/4/2020	RGttr Celebration	Detroit	Virtual Zoom Event	RGttr Participants & guests	34
Multiple	Rain Barrel Workshops and Educational Events (6)	Detroit	Multiple locations, Detroit	Public	183
4/22/2020	Earth Week Virtual Webinar, Detroit Office of Sustainability	Detroit	Virtual Zoom Event	Public	Unknown
9/4/2020	Rain Gardens to the Rescue Self-guided GSI Tour	Detroit	Multiple locations, Detroit	Public	30
Residency for the RGttr program and events were Detroit residents and partner organizations working in Detroit				Total	404

Land + Water WORKS Coalition					
Date	Event	City	Location	Audience	Participation
	Ambasssador training_ Intro to Rain Gardens	Detroit	Virtual Zoom Event	LWW Ambassadors	30
	Ambassador training_ Downspout Disconnect	Detroit	Virtual Zoom Event	LWW Ambassadors	same as above

**Friends of the Rouge 2020 Annual Report for ARC
RESTORATION
January 1, 2020 through December 31, 2020**

Land + Water WORKS Coalition					
Date	Event	City	Location	Audience	Participation
6/10/2020	Intro to Rain Gardens Workshop	Detroit	Hope House, Meditation Missionary Baptist Church	Public	7
6/20/2020	Rain Garden Design Workshop	Detroit	Hope House, Meditation Missionary Baptist Church	Public	6
8/20/2020	Rain Garden Maintenance Workshop	Detroit	Hope House, Meditation Missionary Baptist Church	Public	7
9/12/2020	Rain Garden Instillation	Detroit	Hope House, Meditation Missionary Baptist Church	Public	12
8/10/2020	Intro to Rain Gardens & Garden Design Workshop	Detroit	Bandhu Gardens	Public and Hamtramck High Env. Club	14
8/20/2020	Rain Garden Maintenance Workshop	Detroit	Bandhu Gardens	Public and Hamtramck High Env. Club	11
9/19/2020	Rain Garden Installation	Detroit	Bandhu Gardens	Public and Hamtramck High Env. Club	38
7/20/2020	Intro to Rain Gardens & Garden Design Workshop	Detroit	In Memory of Community Garden (Minock & Whitlock Park)	Public	6
8/11/2020	Rain Garden Maintenance Workshop	Detroit	In Memory of Community Garden (Minock & Whitlock Park)	Public	9
9/10/2020	Rain Garden Installation	Detroit	In Memory of Community Garden (Minock & Whitlock Park)	Public	20
<i>Residency for the LWW program and events were Detroit residents and partner organizations working in Detroit</i>				Total	160

Friends of the Rouge
2020 Annual Report for ARC
RESTORATION - RAINSMART
January 1, 2020 through December 31, 2020

Event	Rain Gardens 101	Master Rain Gardener Training Program	Master Rain Gardener Training Program	Master Rain Gardener Training Program	Master Rain Gardener Training Program	Master Rain Gardener Training Program	Master Rain Gardener Training Program	Rain Gardens 101	Rain garden Maintenance Workday	Rain garden Maintenance Workday	Rain garden Maintenance Workday	Rain garden Maintenance Workday	Rain Barrel Pick-up Event	Rain garden Maintenance Workday	Rain Barrel Pick-up Event	Rain garden Maintenance Workday	Rain Gardens 101	Rain Gardens 101	Rain Gardens 101
Date	43855	43883	43890	43897	43904	43911	43918	43932	43980	43987	43994	44001	44002	44014	44030	44029	44068	44069	44070
City/Township	Livonia	Livonia	Livonia	Livonia	Livonia	Livonia	Livonia	Dearborn	Plymouth	Plymouth	Northville / Salem Twp	Canton	Plymouth	Canton	Dearborn	Canton	Southfield	Southfield	Southfield
Location	Livonia Civic Center Public Library	Kirksey Recreation Center	Kirksey Recreation Center	Kirksey Recreation Center	Kirksey Recreation Center	Kirksey Recreation Center	Kirksey Recreation Center	Virtual (14,000 minutes watched for a 120 minute broadcast)	PARC	Plymouth Township Park	Moraine & Salem	Geneva Presbyterian Church	Plymouth Municipal Yard	PCEP Canton High School	Dearborn Municipal Yard	Hulsing Elementary School	Virtual	Virtual	Virtual
Attendee Residency																			
Allen Park	1	1	1	1	1	1	1						1		4		1	1	
Beverly Hills		2	2	2	2	2	2						4		1		1		
Bingham Farms																		1	
Birmingham	1																1	4	
Bloomfield Hills													1				2	2	
Bloomfield Township																			
Canton	8	1	1	1	1	1	1		2	3			8		2	1	2	3	
Dearborn	7	1	1	1	1	1	1						11		15		3	2	
Dearborn Heights													2						
Detroit	2	2	2	2	2	2	2						1		8		2	6	
Farmington	5												3				1	2	
Farmington Hills	2	3	3	3	3	3	3			1	1		2	1			3	1	
Garden City	3												2		2				
Inkster	1												1				1	1	
Lathrup Village															1		2	2	
Livonia	27											1	10		3		1		
Northville	1												6		1			2	
Northville Township																			
Novi	1												1		1		2	3	
Plymouth	5	1	1	1	1	1	1						31		7		2	2	
Plymouth Township	5	2	2	2	2	2	2			3									
Redford	6												6		2				
Rochester Hills																		1	
Romulus	1																		
Salem Township																			
Southfield	2												1		1		2	1	
Troy																			
Van Buren Twp.																			
Wayne															1				
Walled Lake																			
Westland	2	1	1	1	1	1	1						3		1		2	1	
West Bloomfield																	1	1	
Wixom																	1		
Outside watershed	13	4	4	4	4	4	4						14		14		14	16	
Unknown	14							116									1	22	48
Total	107	18	18	18	18	18	18	116	2	7	1	1	108	1	64	1	45	74	48

Friends of the Rouge
2020 Annual Report for ARC
RESTORATION - RAINSMART
January 1, 2020 through December 31, 2020

Event	Rain Barrel Pick-up Event	Rain Barrel Pick-up Event	Rain garden Maintenance Workday	Master Rain Gardener Training Program	Master Rain Gardener Training Program	Master Rain Gardener Training Program Tour	Master Rain Gardener Training Program	Master Rain Gardener Training Program	Master Rain Gardener Training Program Tour	Master Rain Gardener Training Program	Presentation to Bloomfield Hills Garden Club	Rain garden Maintenance Workday	TOTALS
Date	44072	44092	44100	44103	44110	44113	44117	44124	44130	44131	44137	44506	
City/Township	Plymouth Township	Livonia	Canton	Southfield	Southfield	Southfield	Southfield	Southfield	Plymouth	Southfield	Bloomfield Hills	Salem Township	
Location	Plymouth Township Municipal Yard	Ford Field	PCEP Canton High School	Virtual	Virtual	Multiple Locations	Virtual	Virtual	Multiple Locations	Virtual	Virtual	Salem Township Hall	
Attendee Residency													
Allen Park	2	3											19
Beverly Hills	5	5		1	1		1	1		1			33
Bingham Farms													1
Birmingham		3											9
Bloomfield Hills	1	1									8		15
Bloomfield Township		2											2
Canton	4	5											44
Dearborn	7	4		1	1		1	1		1			60
Dearborn Heights	1	2											5
Detroit	4	9		2	2		2	2		2			54
Farmington	4	4		2	2		2	2		2			29
Farmington Hills	7	2		2	2		2	2		2		1	49
Garden City	1	2		1	1		1	1		1			15
Inkster	1	15											20
Lathrup Village	1												6
Livonia	13			2	2		2	2		2			65
Northville	4	4		1	1		1	1		1			23
Northville Township													0
Novi	6	3		2	2		2	2		2			27
Plymouth		6		1	1		1	1		1		1	65
Plymouth Township	35												55
Redford	2	2											18
Rochester Hills													1
Romulus													1
Salem Township												1	1
Southfield	1	4		2	2		2	2		2			22
Troy		1		3	3		3	3		3			16
Van Buren Twp.													0
Wayne	2												3
Walled Lake													0
Westland		7											22
West Bloomfield				1	1		1	1		1			7
Wixom													1
Outside watershed	21	30	1	3	3		3	3		3		1	163
Unknown			14			13			10				238
Total	122	114	15	24	24	13	24	24	10	24	8	4	1089

**Friends of the Rouge
2020 Report for ARC
ROUGE RIVER WATER TRAIL
January 1, 2020 through December 31, 2020**

Date	1/16/20	2/3/20	5/21/20	6/16/20	6/17/20	6/17/20	7/16/20	7/25/20	10/15/20	12/17/20	10/24/20
Event	Committee Meeting	Presentation to Inkster City Council	Committee Meeting	Connections meeting with Inkster	Connections meeting with Westland	Connections meeting with Wayne	Committee Meeting	WDM Work Day	Committee Meeting	Committee Meeting	Group Paddle
City/Township	Westlan	Inkster	Zoom	Zoom	Zoom	Phone	Zoom	Dearborn	Zoom	Zoom	Melvindale to Dearborn
Attendee Residency											
Allen Park											
Berkley											
Birmingham											
Bloomfield Hills	1								1	1	
Canton											
Dearborn	3		3				3	7	2	4	
Dearborn Heights	1	1	1	1		1	1	1	1	1	
Detroit	2		3	2	2		3			1	
Farmington								1			
Farmington Hills	1								1	1	
Flat Rock			1								
Gibraltar	1										
Howell	1										
Huntington Woods											
Inkster	1	50	1	2			2				
Lansing							2				
Livonia	1		1					2	2	1	
Melvindale								1		1	
Milford											
New Baltimore											
Northville							1				
Novi								1			
Plymouth	1		2							2	

**Friends of the Rouge
2020 Report for ARC
ROUGE RIVER WATER TRAIL
January 1, 2020 through December 31, 2020**

Date	1/16/20	2/3/20	5/21/20	6/16/20	6/17/20	6/17/20	7/16/20	7/25/20	10/15/20	12/17/20	10/24/20
Event	Committee Meeting	Presentation to Inkster City Council	Committee Meeting	Connections meeting with Inkster	Connections meeting with Westland	Connections meeting with Wayne	Committee Meeting	WDM Work Day	Committee Meeting	Committee Meeting	Group Paddle
City/Township	Westlan	Inkster	Zoom	Zoom	Zoom	Phone	Zoom	Dearborn	Zoom	Zoom	Melvindale to Dearborn
Attendee Residency											
Royal Oak											
Sterling Heights											
Southgate	1									1	
Traverse City											
Van Buren											
Warren											
Wayne						1		1			
Westland	1	1	1		2		1	1		1	
West Bloomfield											
Unknown	1		1				2	8	1	1	42
TOTALS	16	52	14	5	4	2	15	23	8	15	42

Friends of the Rouge 2020 Annual Report for ARC
LOCAL AND REGIONAL OUTREACH
January 1, 2020 through December 31, 2020

Date	Event/Meeting Name	Location	FOTR Staff	Display	Participation	Presentation	Viewers
5/12/2020	Take Me to the River - Facebook Live	Birmingham	Edwards			Y	
6/23/2020	Take Me to the River - Facebook Live	Birmingham	Edwards			Y	
1/22/2020	Blue Planet Jobs meeting	Bloomfield Hills	Cassady		Y		
6/19/2020	Rain garden maintenance workday	Canton	Bertrand		Y		1
7/17/2020	Rain garden maintenance workday	Canton	Bertrand		Y		1
9/26/2020	Rain garden maintenance workday	Canton	Bertrand		Y		15
4/21/2020	Take Me to the River - Facebook Live	Dearborn	McCormick			Y	699
5/5/2020	Take Me to the River - Facebook Live	Dearborn	Heikkila			Y	468
6/2/2020	Take Me to the River - Facebook Live	Dearborn	McCormick			Y	826
7/22/2020	NOAA B-WET GLOBE Training	Dearborn	Cassady		Y		
9/1/2020	Rouge Uncruise - Zoom	Dearborn	Petrella, McCormick, Edwards, Hannna		Y	Y	167
9/8/2020	Rouge Uncruise - Zoom	Dearborn	Petrella, McCormick, Edwards, Hannna		Y	Y	178
7/18/2020	Rain Barrel Pick-up Event	Dearborn	Bertrand		Y		64
4/7/2020	Take Me to the River - Facebook Live	Dearborn Heights	Petrella			Y	651
5/19/2020	Take Me to the River - Facebook Live	Dearborn Heights	Petrella			Y	3200
10/7/2020	Fall Monitoring School Site Visit - Crestwood High School	Dearborn Heights	Cassady		Y		
6/30/2020	Take Me to the River - Facebook Live	Detroit	Petrella			Y	629
8/4/2020	Take Me to the River - Facebook Live	Detroit	Petrella			Y	357
8/25/2020	Rouge Uncruise - Zoom	Detroit to Dearborn	Petrella, McCormick, Edwards, Hannna		Y	Y	189
6/25/2020	REP Teacher APHS Meeting	Google Meet	Cassady		Y		
6/16/2020	Take Me to the River - Facebook Live	Inkster	Heikkila			Y	646
2/29/2020	Quiet Adventure Symposium	Lansing	Vallender	Y			
1/25/2020	Rain Gardens 101	Livonia	Bertrand	Y	Y	Y	107
2/22/2020	Master Rain Gardener Training Program	Livonia	Bertrand	Y	Y	Y	18
2/29/2020	Master Rain Gardener Training Program	Livonia	Bertrand	Y	Y	Y	18

Friends of the Rouge 2020 Annual Report for ARC
LOCAL AND REGIONAL OUTREACH
January 1, 2020 through December 31, 2020

Date	Event/Meeting Name	Location	FOTR Staff	Display	Participation	Presentation	Viewers
3/7/2020	Master Rain Gardener Training Program	Livonia	Bertrand	Y	Y	Y	18
3/14/2020	Master Rain Gardener Training Program	Livonia	Bertrand	Y	Y	Y	18
3/21/2020	Master Rain Gardener Training Program	Livonia	Bertrand	Y	Y	Y	18
3/28/2020	Master Rain Gardener Training Program	Livonia	Bertrand	Y	Y	Y	18
5/26/2020	Take Me to the River - Facebook Live	Livonia	Ross			Y	429
9/18/2020	Rain Barrel Pick-up Event	Livonia	Bertrand		Y		114
6/12/2020	Rain garden maintenance workday	Northville / Salem Twp	Bertrand		Y		1
5/29/2020	Rain garden maintenance workday	Plymouth	Bertrand		Y		2
6/5/2020	Rain garden maintenance workday	Plymouth	Bertrand		Y		7
6/20/2020	Rain Barrel Pick-up Event	Plymouth	Bertrand		Y		108
8/29/2020	Rain Barrel Pick-up Event	Plymouth	Bertrand		Y		122
10/7/2020	Fall Monitoring School Site Visit - Steppingstone School	Plymouth	Cassady		Y		
10/26/2020	MRG Tour	Plymouth	Bertrand		Y	Y	10
5/6/2020	Spring Monitoring Day Facebook Video	Plymouth, recording on Facebook & YouTube	Cassady			Y	
4/14/2020	Take Me to the River - Facebook Live	Redford	Ross			Y	503
7/28/2020	Take Me to the River - Facebook Live	River Rouge	Heikkila			Y	484
8/11/2020	Rouge Uncruise - Zoom	River Rouge to Detroit	Petrella, McCormick, Edwards, Hannna		Y	Y	271
8/18/2020	Rouge Uncruise - Zoom	River Rouge to Detroit	Petrella, McCormick, Edwards, Hannna		Y	Y	178
10/9/2020	MRG Tour	Royal Oak, Detroit	Bertrand		Y	Y	13
11/6/2020	Rain garden maintenance workday	Salem Twp	Bertrand		Y		4
8/19/2020	Community Water Day	St. Suzanne Cody Rouge CRC, Detroit	Ross, Heikkila	Y	Y		
4/11/2020	Rain Gardens 101	Virtual	Bertrand		Y	Y	116

Friends of the Rouge 2020 Annual Report for ARC
LOCAL AND REGIONAL OUTREACH
January 1, 2020 through December 31, 2020

Date	Event/Meeting Name	Location	FOTR Staff	Display	Participation	Presentation	Viewers
8/25/2020	Rain Gardens 101	Virtual	Bertrand		Y	Y	45
8/26/2020	Rain Gardens 101	Virtual	Bertrand		Y	Y	74
8/27/2020	Rain Gardens 101	Virtual	Bertrand		Y	Y	48
9/29/2020	Master Rain Gardener Training Program	Virtual	Bertrand		Y	Y	24
10/6/2020	Master Rain Gardener Training Program	Virtual	Bertrand		Y	Y	24
10/13/2020	Master Rain Gardener Training Program	Virtual	Bertrand		Y	Y	24
10/20/2020	Master Rain Gardener Training Program	Virtual	Bertrand		Y	Y	24
10/27/2020	Master Rain Gardener Training Program	Virtual	Bertrand		Y	Y	24
11/2/2020	Presentation to Bloomfield Hills Garden	Virtual	Bertrand		Y	Y	8
7/14/2020	Take Me to the River - Facebook Live	Westland	Hanna			Y	969
10/7/2020	Fall Monitoring School Site Visit - Huron Valley Lutheran High School	Westland	Cassady		Y		
4/28/2020	Take Me to the River - Facebook Live	Westland, recording on Facebook & YouTube	Cassady			Y	547
6/9/2020	Take Me to the River - Facebook Live	Westland, recording on Facebook & YouTube	Cassady			Y	524
7/21/2020	Take Me to the River - Facebook Live	Westland, recording on Facebook & YouTube	Cassady			Y	623
2/17/2020	Blue Planet Jobs meeting	Zoom	Cassady		Y		
4/1/2020	Water School Meeting	Zoom	Cassady, Petrella, McCormick		Y		
4/13/2020	Southeast Michigan Stewardship (SEMIS) Coalition Town Hall	Zoom	Cassady		Y		
5/18/2020	SEMIS Community Forum, Youth Fishbowl	Zoom	Cassady		Y		
6/4/2020	SEMIS Student Presentations	Zoom	Cassady		Y		
6/25/2020	REP Teacher Group Meeting	Zoom	Cassady		Y		
5/20/2020	Annual Meeting Presentation Video Recording	Zoom, recording on YouTube	Bertrand, Cassady, Edwards, Hanna, Heikkila, McCormick, Petrella, Ross			Y	