



Frog and Toad Status in Michigan, 2019

**Michigan Department of Natural Resources
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Melissa Nichols**

The Michigan Frog and Toad Survey has successfully completed 24 years of data collection and this report presents results and data analysis for statewide frog and toad distributions and abundances during the 2019 survey. There were 530 unique sites surveyed in Zone 1, 220 in Zone 2, 40 in Zone 3, and 80 in Zone 4, for a total of 870 sites statewide, a 25% decrease from 2018. Recruiting and encouragement of current volunteers to submit data will continue to be done to increase data flow. Three species, Fowler's toad, Blanchard's cricket frog, and mink frog, have ranges that include only a portion of the state. As was done in previous years, only data from those sites within the native range of those species were used in analyses.

A calling index of abundance of 0, 1, 2, or 3 (less abundant to more abundant) is assigned for each species at each site. Calling indices were averaged for a particular species for each zone (Tables 1-4). This will vary widely and cannot be considered a good estimate of abundance. Calling varies greatly with weather conditions. Calling indices will also vary between observers. Results from the evaluation of methods and data quality showed that volunteers were very reliable in their abilities to identify species by their calls, but there was variability in abundance estimation (Genet and Sargent 2003). Calling Indices of abundance will be reported as in past summaries but not used to actually estimate abundance of species.

Mink frog observations continue to be low at sites across the Upper Peninsula. They were reported at 1 site in Zone 3 and 5 sites in Zone 4 this year. There is a concern that data is not representative of the actual population due to the difficulty of surveying for this species. They tend to call at very early hours of the morning. Pickerel frog occurrence remains low, possibly a result of confusion between this species' calls and that of the Northern leopard frog. Pickerel frog occurrences have been known to be lower than the leopard frog in other Great Lakes states; however, efforts to investigate their rarity need to be undertaken soon. Northern leopard frog observations remained stable. Observations of the Cope's gray treefrog increased slightly but continue to be low, relative to the Eastern gray treefrog. There

is speculation that the low number of observations of Cope's gray treefrogs may be due to the need to verify the observation. Surveyors may not be able to verify the call or may just not want to bother doing it.

Data on wood frog observations should be interpreted cautiously due to their brief calling periods and associated difficulty of conducting the first run when wood frogs are calling. Green frog observations are beginning to stabilize. Using all the routes that submitted data in 2018 the percentage of sites at which a species was heard per route was calculated for each zone (Tables 1-4).

A statewide, 24-year analysis was done this year, along with a 10-year analysis and a one-year analysis (Table 5). The average number of sites per route at which a species was heard for all the routes was charted by year for each species. The one-year percent change as well as the 10-year and 24-year trends were calculated for each species using the number of sites per route. The 10-year analysis shows two species declining, and the 24-year analysis shows declines in eight species. For most species the trends are similar between zones. Most species' trends appear to be relatively stable.

Table 5. Changes in Frog & Toad Observations for One Year, Ten Years, and 24 Years.

Species	2018-2019			2010-2019		1996-2019	
	2019 Mean	SE	% Change	10-yr Mean	Trend	24-yr Mean	Trend
Fowler's Toad	0.2	0.2	100	0.1	0.02	0.1	-0.01
Wood Frog	4.1	0.3	32.3	3.4	0.0	3.5	-0.01
Western Chorus Frog	3.7	0.3	8.8	3.7	-0.05	4.1	-0.06
Spring Peeper	8.8	0.2	4.8	8.4	0.07	8.4	-0.02
Northern Leopard Frog	1.4	0.2	-6.7	1.5	0.0	1.4	0.01
Pickerel Frog	0.1	0.0	0	0.1	0.0	0.1	0.0
American Toad	4.0	0.3	25	3.8	0.02	3.8	-0.02
Eastern Gray Treefrog	7.1	0.3	12.7	6.4	0.07	6.4	-0.04
Cope's Gray Treefrog	0.2	0.1	566.7	0.1	0.0	0.1	-0.01
Blanchard's Cricket Frog	0.3	0.2	50	0.4	0.03	0.2	0.02
Mink Frog	0.6	0.3	-40	0.7	0.08	0.4	0.05
Green Frog	5.2	0.3	-8.8	5.4	0.02	5.6	-0.03
Bullfrog	1.1	0.2	0	1.3	-0.02	1.2	0.0

Mean=Average number of sites per route at which species was heard
Negative Change

All updated data summaries, phenologies, range maps and other information on the Michigan Frog and Toad Survey are featured on the DNR web site: <http://www.michigan.gov/dnr/> and searching "Frogs and Toads".

All questions concerning these data summaries and/or the Michigan Frog and Toad Survey should be directed to:

DNR - Wildlife Division
P.O. Box 30180
Lansing, MI 48909
(517) 284-6216
e-mail: DNR-FrogSurvey@mi.gov

Literature Cited

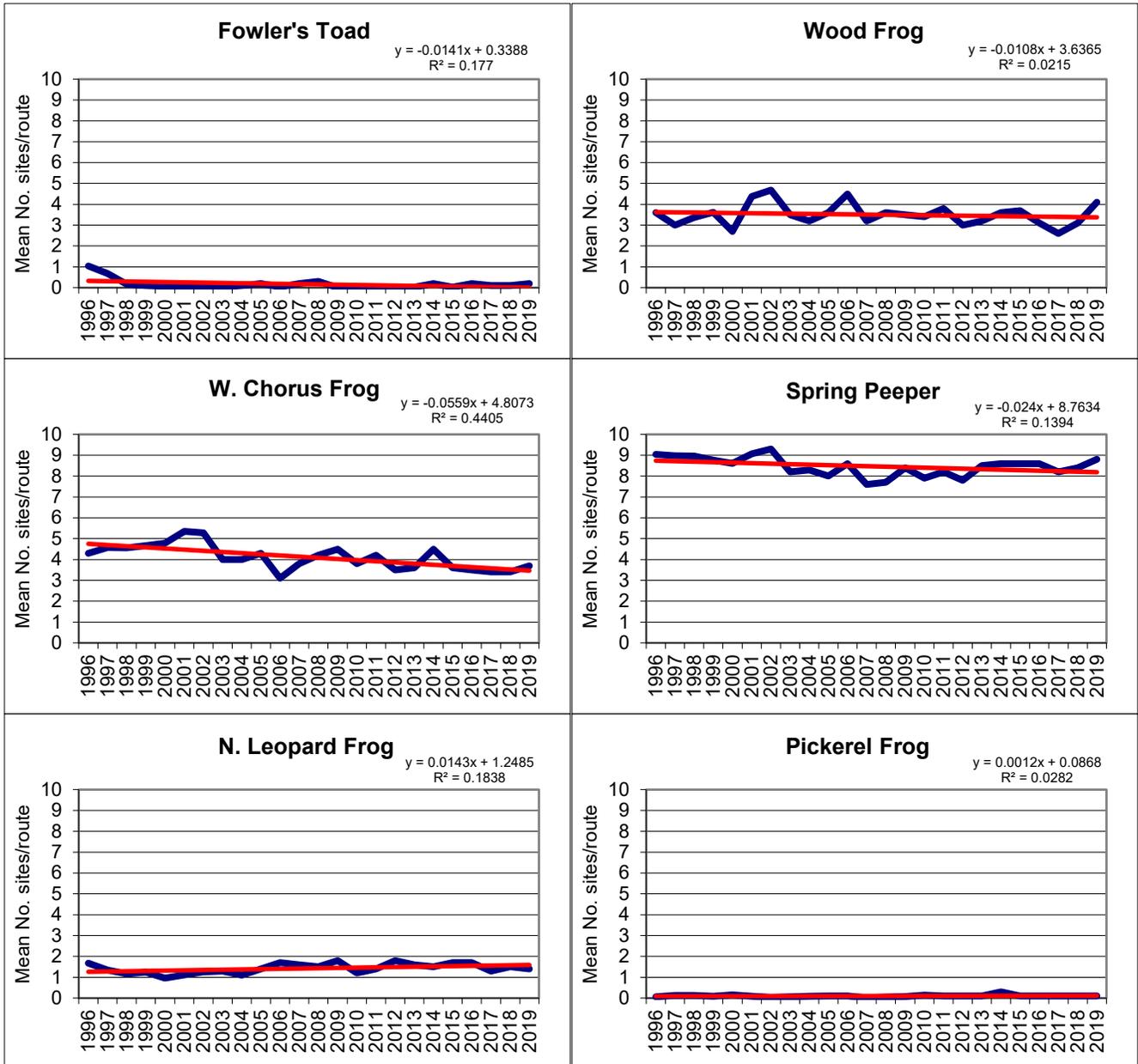
Genet, K and L.G. Sargent. 2003. Evaluation of methods and data quality from a volunteer-based amphibian call survey. Wildlife Society Bulletin 31 (3): 703-714

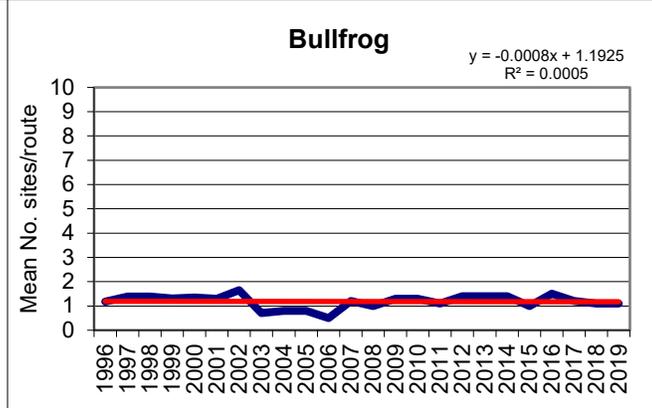
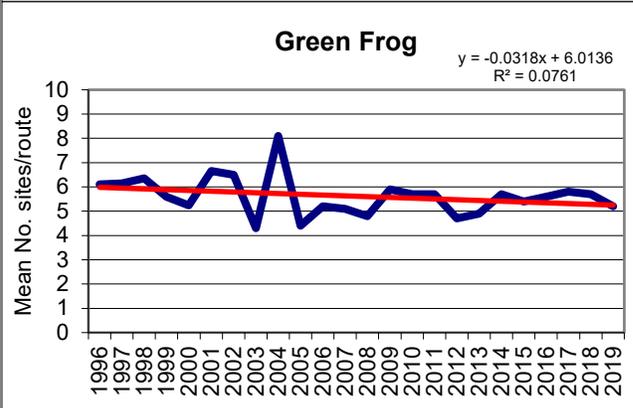
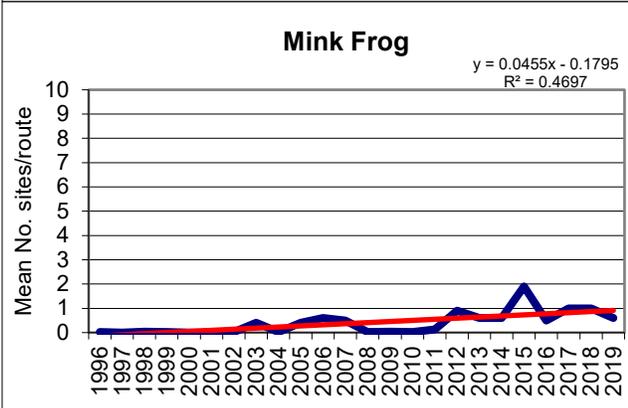
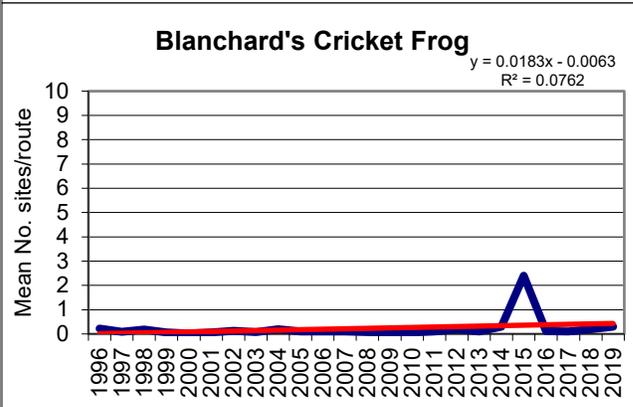
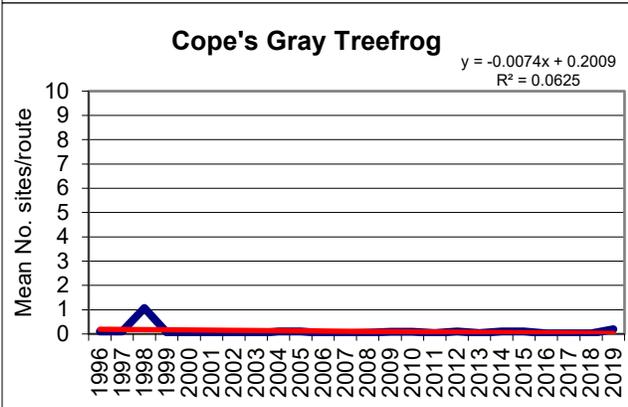
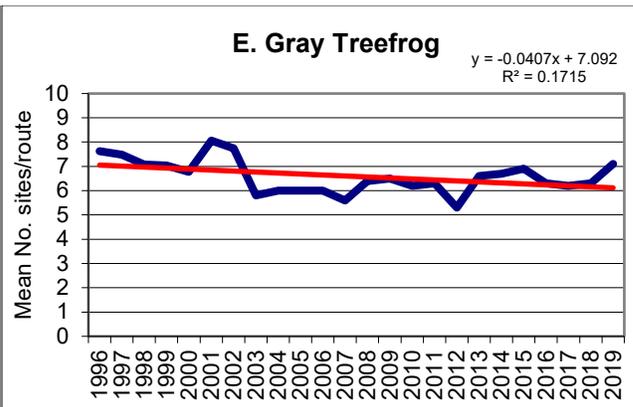
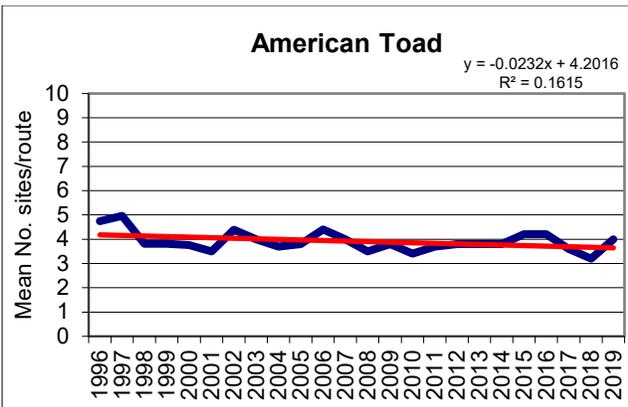
Appendix A

Statewide species abundances and trends 1996-2019

Sites/route at which species were heard

Trend line





Appendix B Summary of Data by Zone

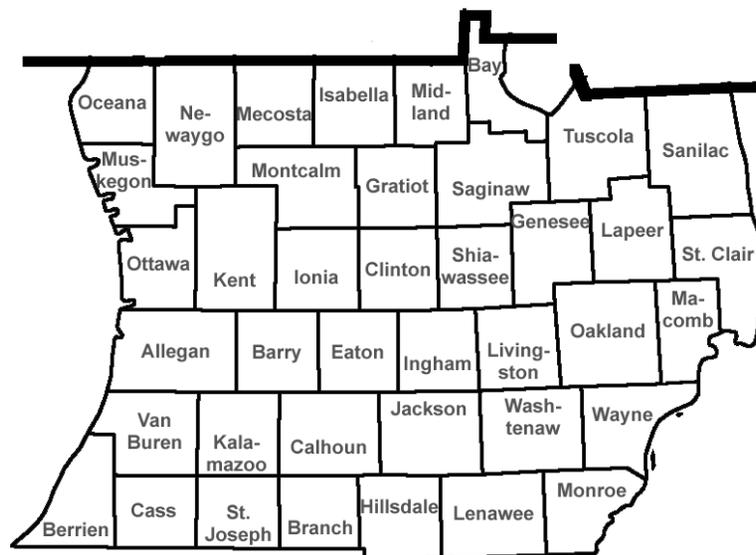
**Table 1. 2019 SUMMARY OF FROG AND TOAD SURVEY
Zone 1 - 530 sites**

	Fowler's Toad n=240 _f	Wood Frog n=530	W. Chorus Frog n=530	Spring Peeper n=530	Northern Leopard Frog n=530	Pickereel Frog n=530	American Toad n=530	Gray Treefrog n=530	**Cope's Gray Treefrog n=530	**Blanchard's Cricket Frog n=400 _f	Mink Frog n=0 _f	Green Frog n=530	Bullfrog n=530
Mean*	1.6	2.0	1.8	2.3	1.3	1.0	1.7	2.1	1.2	1.9	---	1.3	1.2
No. Sites	7	206	259	492	86	3	201	422	11	12	---	304	98
% Sites	2.9	38.9	48.9	92.8	16.2	<1.0	37.9	79.6	2.0	3.0	---	57.4	18.5

* Mean calling index of sites where species were heard

_f n is the number of sites within that species range - calculations include sites in native range of species only

** Confirmed observations



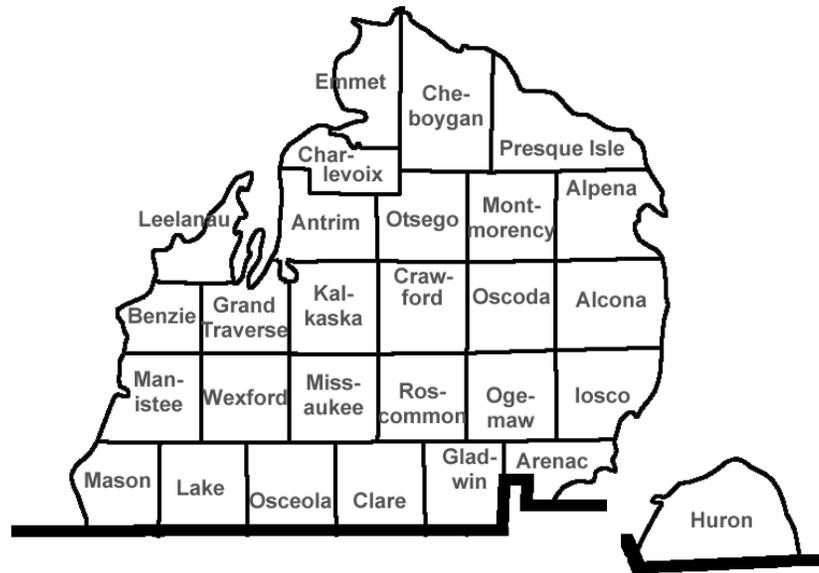
**Table 2. 2019 SUMMARY OF FROG AND TOAD SURVEY
Zone 2 - 220 sites**

	Fowler's Toad n=80f	Wood Frog n=220	W. Chorus Frog n=220	Spring Peeper n=220	Northern Leopard Frog n=220	Pickereel Frog n=220	American Toad n=220	Gray Treefrog n=220	**Cope's Gray Treefrog n=220	**Blanchard's Cricket Frog n=0f	Mink Frog n=0f	Green Frog n=220	Bullfrog n=220
Mean*	1.0	1.8	1.6	2.3	1.2	0	1.6	1.9	1.7	---	---	1.5	1.5
No. Sites	1	102	64	198	34	0	107	149	3	---	---	94	4
% Sites	1.2	46.4	29.1	90.0	15.5	0	48.6	67.7	1.4	---	---	42.7	1.8

* Mean calling index of sites where species were heard

f n is the number of sites within that species range - calculations include sites in native range of species only

** Confirmed observations



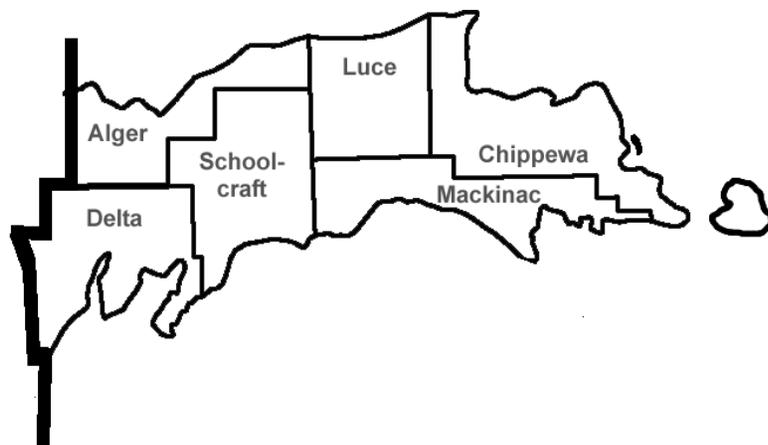
**Table 3. 2018 SUMMARY OF FROG AND TOAD SURVEY
Zone 3 - 40 sites**

	Fowler's Toad n=0f	Wood Frog n=40	W. Chorus Frog n=40	Spring Peeper n=40	Northern Leopard Frog n=40	Pickereel Frog n=40	American Toad n=40	Gray Treefrog n=40	**Cope's Gray Treefrog n=40	Blanchard's Cricket Frog n=0f	Mink Frog n=40f	Green Frog n=40	Bullfrog n=40
Mean*	--	1.6	0	1.8	1.0	0	1.6	1.7	0	---	2.0	1.8	0
No. Sites	--	16	0	29	1	0	10	17	0	---	1	17	0
% Sites	--	40.0	0	72.5	2.5	0	25.0	42.5	0	---	2.5	42.5	0

Mean calling index of sites where species were heard

f n is the number of sites within that species range - calculations include sites in native range of species only

** Confirmed observations



**Table 4. 2019 SUMMARY OF FROG AND TOAD SURVEY
Zone 4 - 80 sites**

	Fowler's Toad n=0f	Wood Frog n=80	W. Chorus Frog n=80	Spring Peeper n=80	Northern Leopard Frog n=80	Pickereel Frog n=80	American Toad n=80	Gray Treefrog n=80	**Cope's Gray Treefrog n=80	Blanchard's Cricket Frog n=0f	Mink Frog n=80f	Green Frog n=80	Bullfrog n=80
Mean*	----	1.8	1.1	2.5	1.0	1	1.7	2.0	0	---	1.6	1.5	0
No. Sites	----	37	4	68	5	2	37	42	0	---	5	48	0
% Sites	----	46.3	5.0	85.0	6.3	2.5	46.3	52.5	0	---	6.3	60.0	0

* Mean calling index of sites where species were heard

f n is the number of sites within that species range - calculations include sites in native range of species only

** Confirmed observations

