



Frog and Toad Status in Michigan, 2020

**Michigan Department of Natural Resources
Wildlife Report No. 3696, November 2020
Caitlin Boon**

The Michigan Frog and Toad Survey has successfully completed 25 years of data collection and this report presents results and data analysis for statewide frog and toad distributions and abundances during the 2020 survey. There were 451 unique sites surveyed in Zone 1, 200 in Zone 2, 40 in Zone 3, and 70 in Zone 4, for a total of 761 sites statewide, a 17% decrease from 2019. With the pandemic and subsequent restrictions in place for much of the spring and summer, a lower level of participation is completely understandable. 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 estimate abundance of species.

All data for 2020 should be interpreted cautiously. Due to the coronavirus pandemic, a statewide Safer-At-Home Order was in place from March 23 until June 1, 2020. Many volunteers chose not to participate in 2020, and those who did might have modified the dates that they surveyed or their survey parties to comply with the Order. A number of volunteers skipped the early spring survey period, so species that breed early, like wood frog and western chorus frog, may have been under-sampled compared to previous years.

Mink frog observations continue to be low at sites across the Upper Peninsula. They were reported at 2 sites in Zone 3 and 4 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 declined and continue to be rare, 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 2020 the percentage of sites at which a species was heard per route was calculated for each zone (Tables 1-4).

A statewide, 25-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 four species declining, and the 25-year analysis shows declines in eight species. For most species the trends are similar between zones. Most species' trends appear to be relatively stable.

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".

Table 5. Changes in Frog & Toad Observations for One Year, Ten Years, and 25 Years.

Species	2020 Mean	SE	% Change	10-yr Mean	Trend	25-yr Mean	Trend
Fowler's Toad	0.1	0.1	-40.0	0.1	0.02	0.2	-0.01
Wood Frog	3.1	0.3	-25.1	3.3	-0.02	3.5	-0.01
Western Chorus Frog	3.6	0.3	-2.4	3.7	-0.05	4.1	-0.05
Spring Peeper	8.8	0.2	0.2	8.5	0.07	8.5	-0.02
Northern Leopard Frog	1.8	0.2	31.4	1.6	0.0	1.4	0.02
Pickereel Frog	0.1	0.0	-10.0	0.1	0.0	0.1	0.0
American Toad	4.1	0.4	3.5	3.8	0.01	3.9	-0.02
Eastern Gray Treefrog	6.6	0.3	-7.3	6.4	0.07	6.6	-0.04
Cope's Gray Treefrog	0.0	0.0	-85.0	0.1	0.0	0.1	-0.01
Blanchard's Cricket Frog	0.2	0.1	-40.0	0.4	-0.01	0.2	0.02
Mink Frog	0.1	0.0	-86.7	0.7	0.0	0.4	0.04
Green Frog	5.9	0.3	13.1	5.5	0.06	5.6	-0.03
Bullfrog	1.3	0.2	21.8	1.3	-0.01	1.2	0.0

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

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

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

Literature Cited

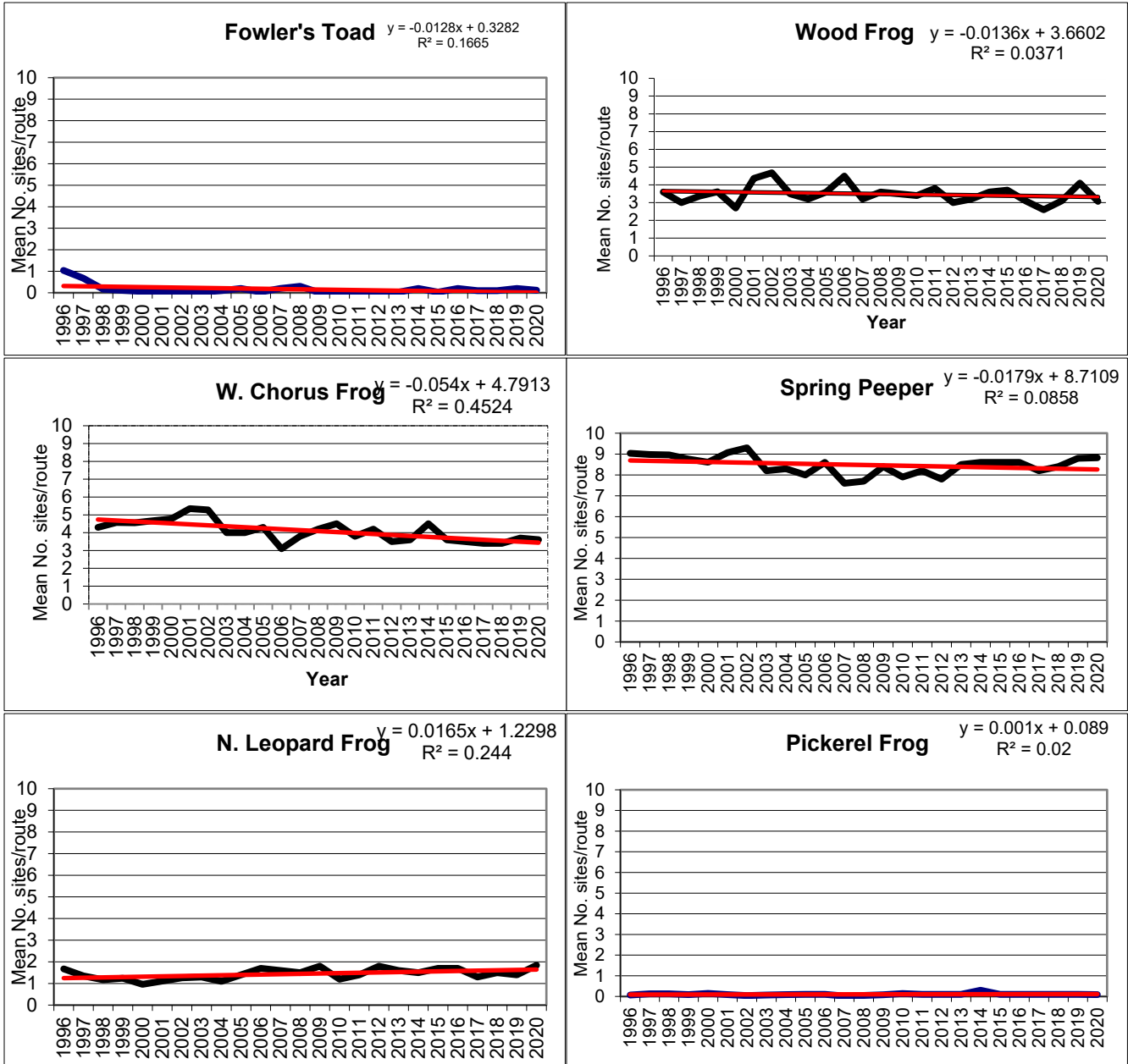
Genet, K and L.G. Sargent. 2003. Evaluation of methods and data quality from a volunteer-based amphibian call survey. Wildlife Society Bulletin 31 (3): 703-714

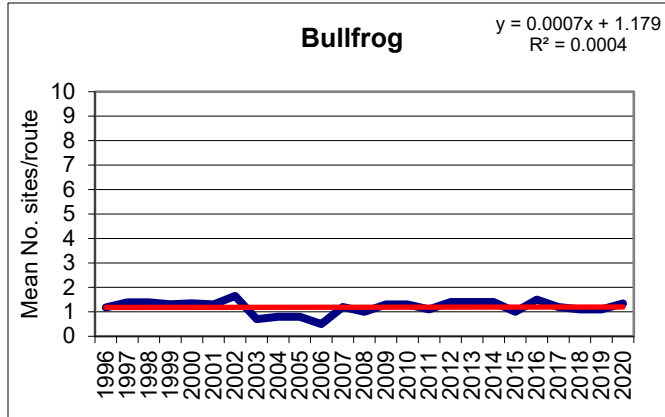
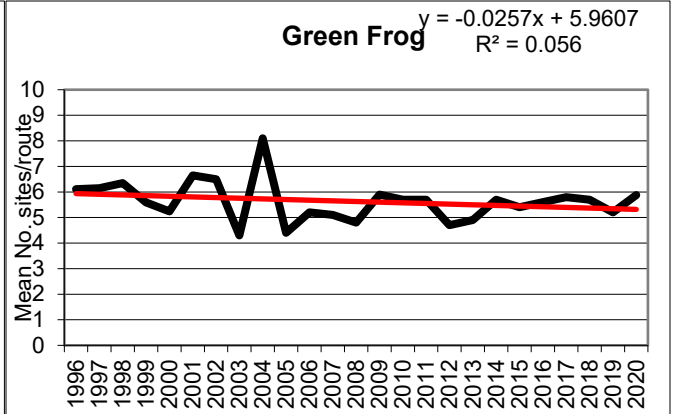
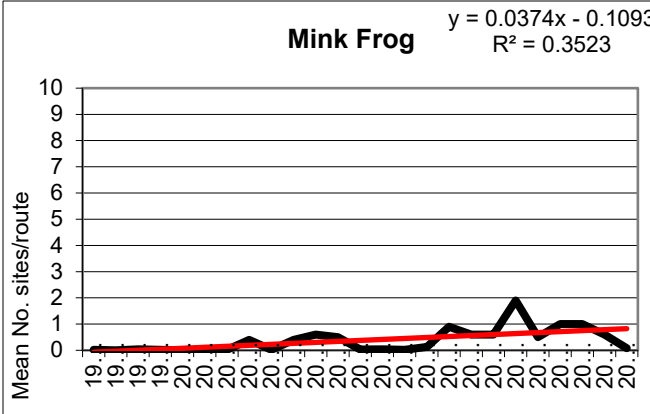
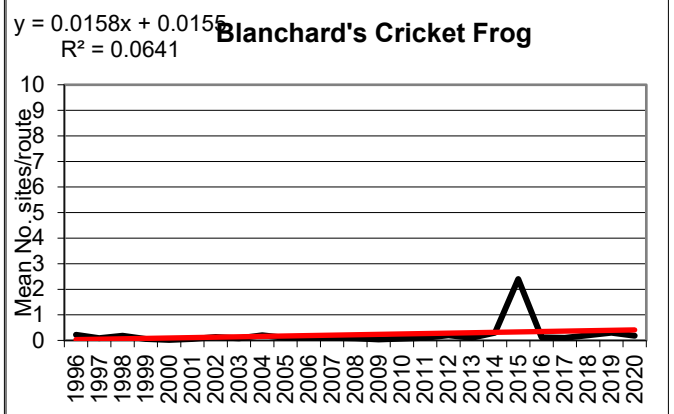
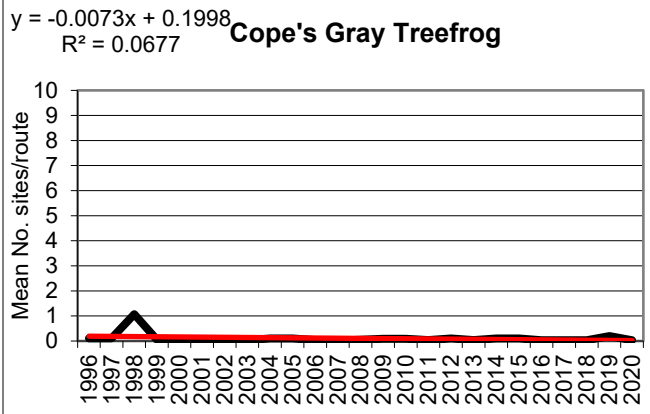
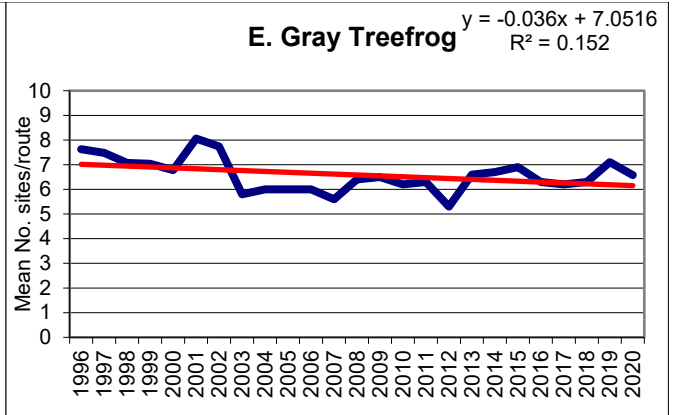
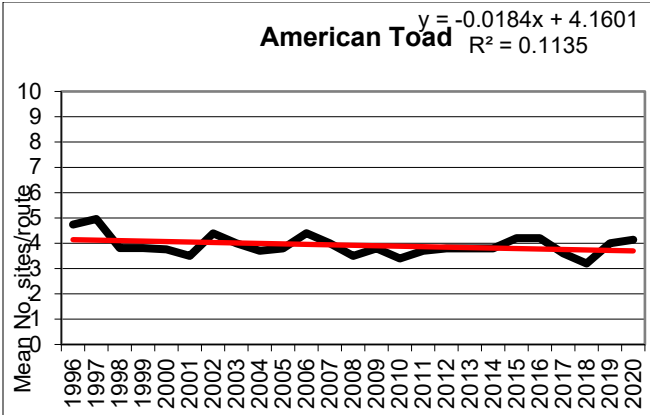
Appendix A

Statewide species abundances and trends 1996-2020

Sites/route at which species were heard

Trend line





Appendix B
Summary of Data by Zone

Table 1. 2020 SUMMARY OF FROG AND TOAD SURVEY

Zone 1 - 451 sites

	Fowler's Toad n=230 _f	Wood Frog n=451	W. Chorus Frog n=451	Spring Peeper n=451	Northern Leopard Frog n=451	Pickereel Frog n=451	American Toad n=451	Gray Treefrog n=451	**Cope's Gray Treefrog n=451	**Blanchard's Cricket Frog n=400 _f	Mink Frog n=0 _f	Green Frog n=451	Bullfrog n=451
Mean*	1.1	1.8	1.8	2.3	1.3	1.8	2.0	2.0	2	1.9	NA	1.4	1.4
No. Sites	9	129	214	403	85	4	165	309	2	17	NA	265	101
% Sites	3.9	28.6	47.5	89.4	18.8	<1.0	36.6	68.5	<1.0	4.3	NA	56.8	22.4

* 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

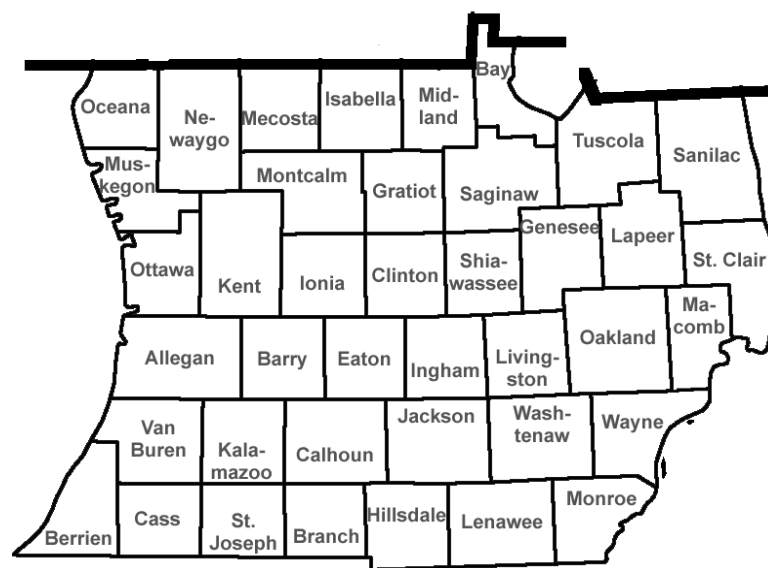


Table 2. 2020 SUMMARY OF FROG AND TOAD SURVEY

Zone 2 - 200 sites

	Fowler's Toad n=90f	Wood Frog n=200	W. Chorus Frog n=200	Spring Peeper n=200	Northern Leopard Frog n=200	Pickrel Frog n=200	American Toad n=200	Gray Treefrog n=200	**Cope's Gray Treefrog n=200	**Blanchard's Cricket Frog n=0f	Mink Frog n=0f	Green Frog n=200	Bullfrog n=200
Mean*	0	1.5	1.6	2.4	1.2	1.7	1.9	2.1	0	NA	NA	1.5	2
No. Sites	0	59	51	167	31	3	100	125	0	NA	NA	114	1
% Sites	0	29.5	25.5	83.5	15.5	1.5	50.0	62.5	0	NA	NA	57.0	<1.0

* 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

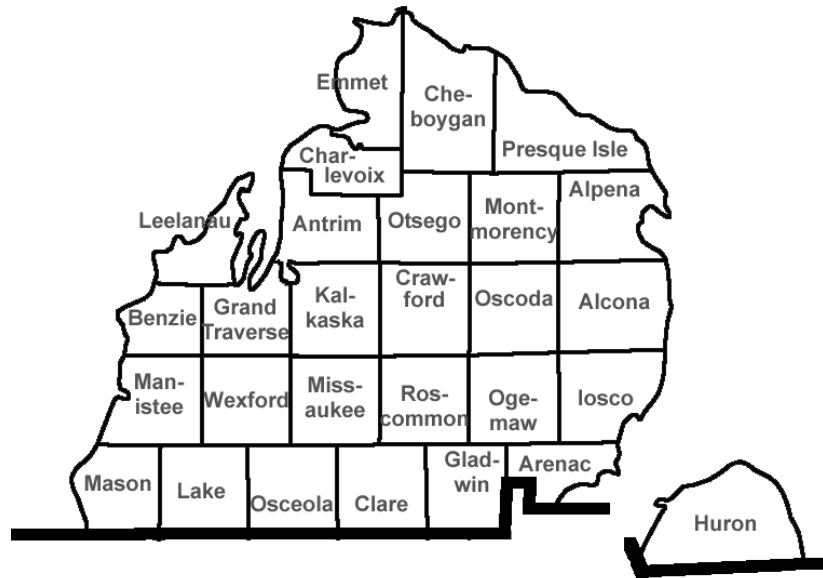


Table 3. 2020 SUMMARY OF FROG AND TOAD SURVEY

Zone 3 - 40 sites

	Fowler's Toad n=0 ^f	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=0 ^f	Mink Frog n=40 ^f	Green Frog n=40	Bullfrog n=40
Mean*	--	1.9	1.3	2.2	1.3	0	1.8	1.7	0	NA	2.3	1.7	0
No. Sites	--	24	4	37	6	0	18	26	0	NA	2	27	0
% Sites	--	60.0	10.0	92.5	15.0	0	45.0	65.0	0	NA	5.0	67.5	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. 2020 SUMMARY OF FROG AND TOAD SURVEY

Zone 4 - 70 sites

	Fowler's Toad n=0 ^f	Wood Frog n=70	W. Chorus Frog n=70	Spring Peeper n=70	Northern Leopard Frog n=70	Pickereel Frog n=70	American Toad n=70	Gray Treefrog n=70	**Cope's Gray Treefrog n=70	Blanchard's Cricket Frog n=0 ^f	Mink Frog n=70 ^f	Green Frog n=70	Bullfrog n=70
Mean*	NA-	2.0	1.1	2.7	1.2	0	1.9	2	0	NA	1	1.6	0
No. Sites	NA-	21	5	63	18	0	32	40	0	NA	4	42	0
% Sites	NA-	30.0	7.1	90.0	25.7	0	45.7	57.1	0	NA	5.7	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

