



Frog and Toad Status in Michigan, 2017

**Michigan Department of Natural Resources
Wildlife Report No. 3651, October, 2017
Lori Sargent**

The Michigan Frog and Toad Survey has successfully completed 22 years of data collection. There were 690 unique sites surveyed in Zone 1, 259 in Zone 2, 70 in Zone 3, and 92 in Zone 4, for a total of 1111 sites statewide, a 1% increase from 2016. 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 10 sites in Zone 3 and 6 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. There are still thoughts among the scientific community that mink frogs are actually declining in Michigan (J. Harding, pers. comm.). 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 continue to increase. Occurrences of the Cope's gray treefrog continue to be low, relative to the Eastern gray treefrog. There is speculation that the continued decline in 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 being to stabilize and show mild increases in observations. Using all the routes that submitted data in 2017 the percentage of sites at which a species was heard per route was calculated for each zone (Tables 1-4).

A statewide, 22-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. Percent change was calculated for each species using the number of sites per route. For most species the trends are similar between zones. Most species' trends appear to be stable or increasing. The 10-year analysis shows only one species declining, which is up from none in 2016. The 20-year analysis shows declines in 10 species, which is up from 7 as calculated in 2016. Research projects focusing on frog and toad populations are welcome and necessary.

Table 5. Changes in Frog & Toad Observations for One Year, Ten Years and 22 Years.

Species	2016-2017			2008-2017			1996-2017		
	2017 Mean	% change	95% CI	10-yr Mean	% change	95% CI	20-yr Mean	% change	95% CI
Fowler's Toad	0.1	-50.0	±0.07	0.1	0.1	±0.00	0.2	-0.4	±0.11
Wood Frog	2.6	-16.1	±0.50	3.4	-0.2	±0.08	3.5	-0.2	±0.23
Western Chorus Frog	3.4	-2.8	±0.10	3.9	0.0	±0.11	4.2	-0.2	±0.26
Spring Peeper	8.2	-4.6	±0.39	8.2	0.2	±0.07	8.4	-0.0	±0.20
Northern Leopard Frog	1.3	-23.5	±0.39	1.6	0.2	±0.03	1.4	0.2	±0.11
Pickrel Frog	0.1	0	---	0.1	4.5	±0.00	0.1	-0.2	±0.02
American Toad	3.6	-14.3	±0.59	3.8	0.2	±0.04	3.9	0.0	±0.17
Eastern Gray Treefrog	6.2	-1.6	±0.10	6.3	0.2	±0.11	6.6	-0.1	±0.31
Cope's Gray Treefrog	0.0	0	---	0.1	0.6	±0.00	0.1	-1.0	±0.10
Blanchard's Cricket Frog	0.1	-16.7	±0.02	0.4	0.3	±0.32	0.2	-0.4	±0.22
Mink Frog	1.0	100	±0.50	0.6	0.1	±0.22	0.4	25.5	±0.20
Green Frog	5.8	3.6	±0.20	5.4	0.2	±0.12	5.6	-0.0	±0.37
Bullfrog	1.2	-20.0	±0.29	1.3	0.4	±0.02	1.2	-0.1	±0.12

Negative change

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

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/>. Click on "Wildlife and Habitat" then "Research Projects" then "Frog and Toad Survey".

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

Lori Sargent
DNR - Wildlife Division
P.O. Box 30180
Lansing, MI 48909
(517) 284-6216
e-mail: sargentL@michigan.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

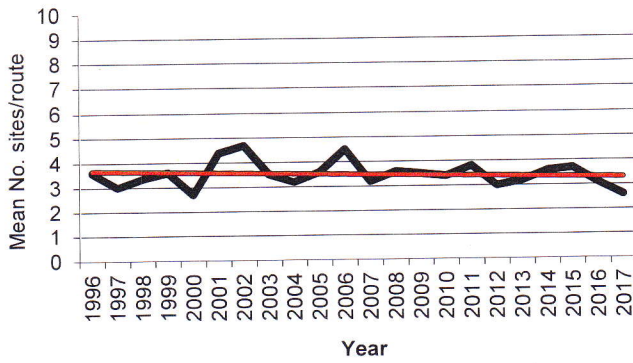
Appendix A

Statewide species abundances and trends 1996-2017

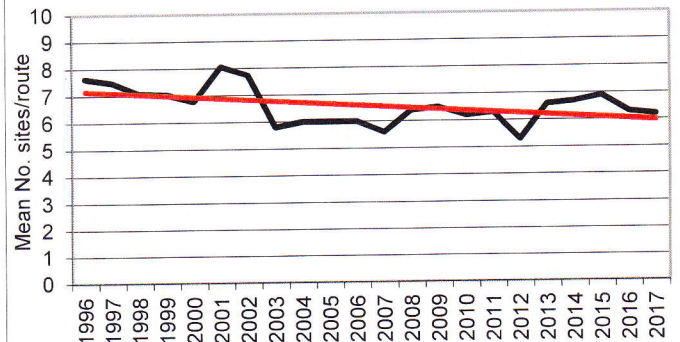
Sites/route at which species were heard

 Trend line

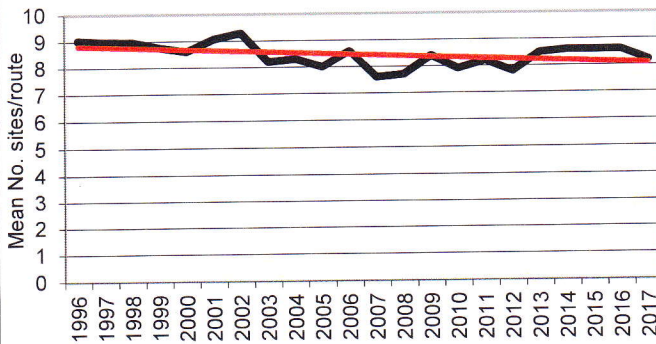
Wood Frogs



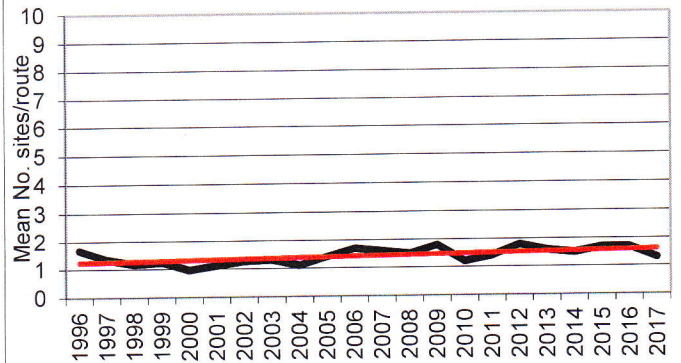
E. Gray Treefrogs



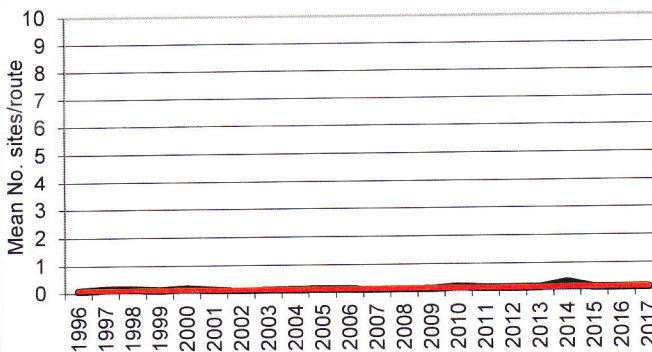
Spring Peepers



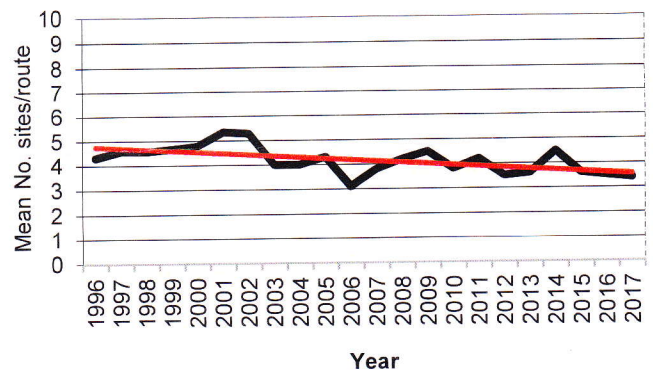
N. Leopard Frogs



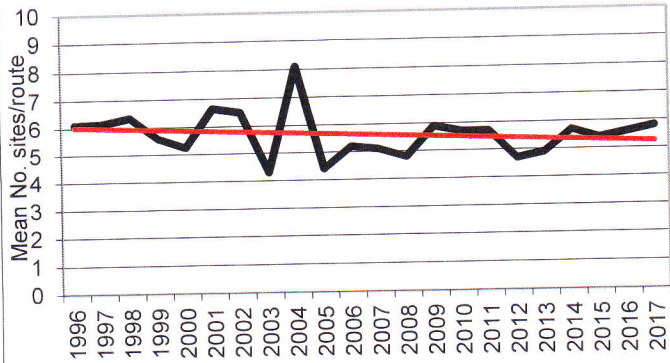
Pickerel Frogs



W. Chorus Frogs



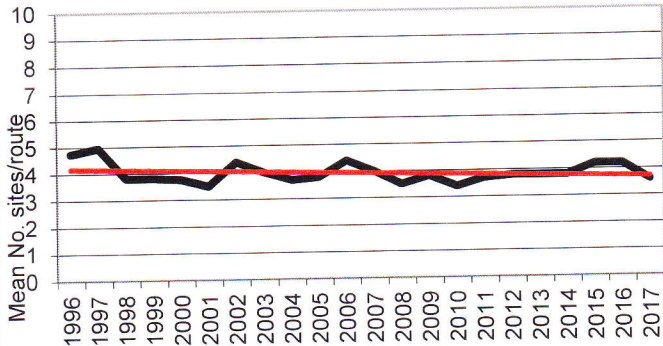
Green Frogs



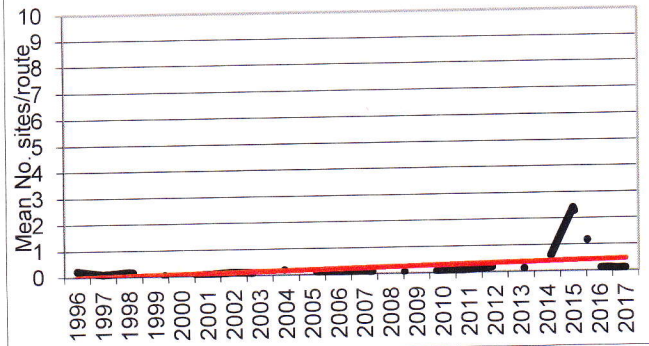
Bullfrogs



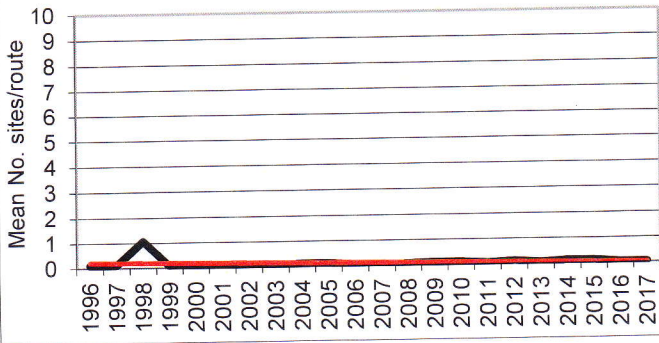
American Toads



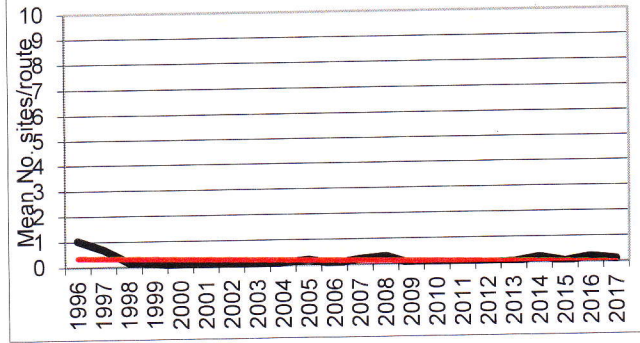
Blanchard's Cricket Frogs



Cope's Gray Treefrogs



Fowler's Toads



Mink Frogs

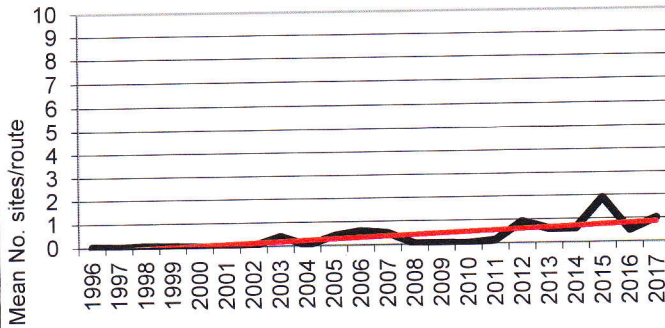


Table 1. 2017 SUMMARY OF FROG AND TOAD SURVEY
Zone 1 - 690 sites

	Fowler's Toad n=330f	Wood Frog n=690	W. Chorus Frog n=690	Spring Peeper n=690	Northern Leopard Frog n=690	Pickrel Frog n=690	American Toad n=690	Gray Treefrog n=690	**Cope's Gray Treefrog n=690	**Blanchard's Cricket Frog n=690f	Mink Frog n=0f	Green Frog n=690	Bullfrog n=690
Mean*	1.0	1.74	1.69	2.21	1.17	1.0	1.67	1.98	1.33	2.0	---	1.38	1.27
No. Sites	2	156	272	539	101	6	228	444	3	10	---	413	133
% Sites	0.6	22.6	39.4	78.1	14.6	0.9	33.0	64.3	0.4	1.4	---	59.8	19.3

* 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

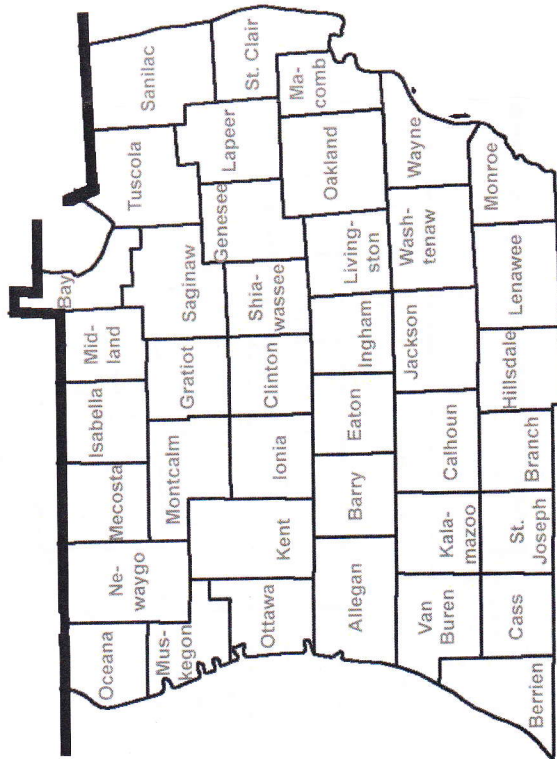


Table 2. 2017 SUMMARY OF FROG AND TOAD SURVEY
Zone 2 - 259 sites

	Fowler's Toad n=119/ f	Wood Frog n=259	W. Chorus Frog n=259	Spring Peeper n=259	Northern Leopard Frog n=259	Pickrel Frog n=259	American Toad n=259	Gray Treefrog n=259	**Cope's Gray Treefrog n=259	**Blanchard's Cricket Frog n=0/ f	Mink Frog n=0/ f	Green Frog n=259	Bullfro n=25/ f
Mean*	1.0	1.67	1.67	2.23	1.18	1.33	1.60	1.97	0	---	---	1.47	1.2
No. Sites	1	66	75	232	29	3	105	147	0	---	---	129	
% Sites	0.8	25.5	29.0	89.6	11.2	1.2	40.5	56.8	0	---	---	49.8	1.

* 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

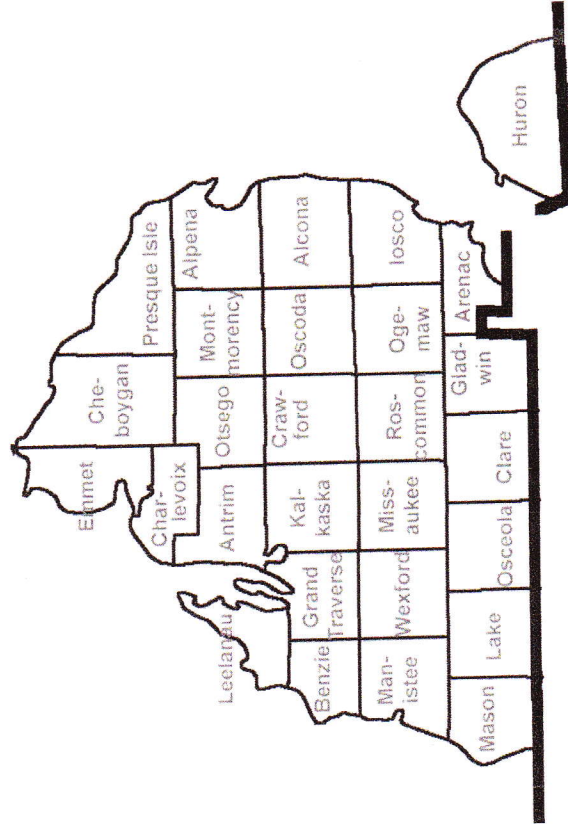


Table 3. 2017 SUMMARY OF FROG AND TOAD SURVEY

Zone 3 - 70 sites

	Fowler's Toad n=0f	Wood Frog n=70	W. Chorus Frog n=70	Spring Peeper n=70	Northern Leopard Frog n=70	Pickrel Frog n=70	American Toad n=70	Gray Treefrog n=70	**Cope's Gray Treefrog n=70	Blanchard's Cricket Frog n=0f	Mink Frog n=70f	Green Frog n=70	Bullfr n=70
Mean*	--	1.7	1.0	2.4	1.4	1.0	1.9	2.0	0	--	1.3	1.9	
No. Sites	--	27	11	64	10	1	37	34	0	--	10	43	
% Sites	--	38.6	15.7	91.4	14.3	1.4	52.8	48.6	0	--	14.3	61.4	

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

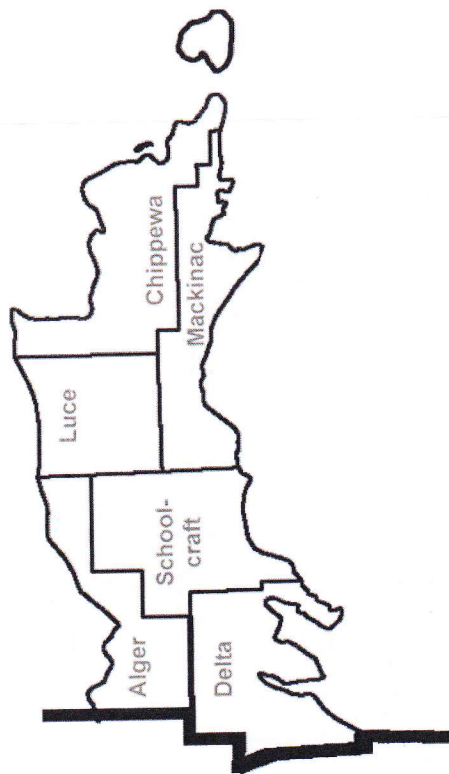


Table 4. 2017 SUMMARY OF FROG AND TOAD SURVEY
Zone 4 - 92 sites

	Fowler's Toad n=0/f	Wood Frog n=92	W. Chorus Frog n=92	Spring Peeper n=92	Northern Leopard Frog n=92	Pickrel Frog n=92	American Toad n=92	Gray Treefrog n=92	**Cope's Gray Treefrog n=92	Blanchard's Cricket Frog n=0/f	Mink Frog n=92/f	Green Frog n=92	Bullfro n=92
Mean*	----	1.7	1.1	2.2	1.1	3.0	2.2	1.9	0	---	1.3	1.4	
No. Sites	----	42	21	86	7	1	33	58	0	---	6	52	
% Sites	----	45.6	22.8	93.5	7.6	1.1	35.9	63.0	0	---	6.5	56.5	

* 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

