

Michigan Frog and Toad Survey

Reporting Office: Seney NWR

Species: Anurans

JUSTIFICATION AND OBJECTIVES

Michigan is home to 13 native species of anurans (frogs and toads). In recent years, many observers have been concerned with the apparent rarity, decline, and/or population die-offs of several of these species. This concern was not only for the species themselves, but also for the ecosystems on which they depend. Frogs and toads, like many other aquatic organisms, are sensitive to changes in water quality and adjacent land use practices, and their populations undoubtedly serve as an index to environmental quality. As a result, the Michigan Frog and Toad Survey was initiated in 1988 to increase our knowledge of anuran abundance and distribution, and to monitor populations over the long term. A statewide permanent system was developed and initiated in 1996. This cooperative survey is modeled after the very successful Wisconsin Frog and Toad Survey, which was started in 1981. Over the years, the Michigan Frog and Toad Survey will provide a wealth of information on the status of Michigan frog and toad populations, and help monitor the quality of our environment. Seney NWR is an important part of this survey because it is one of the more consistent survey points in the Upper Peninsula and provides a sample for the underrepresented mink frog.

Seney NWR has data from 1988-present. Route #456 is currently surveyed, with other areas surveyed in the past as well (see Fig. 1, above).

STATISTICAL CONSIDERATIONS

The Michigan DNR pools all data for Michigan and provides descriptive statistics by each of four zones in the state. These statistics illustrate a) the number of stops at which a given species was observed, b) the mean abundance index for all stops, c) the number of sites (routes) on which the species was observed, and d) the percentage of sites the species was observed.

DATA COLLECTION PROCEDURES

Data forms are provided on a yearly basis by the Michigan DNR-Natural Heritage Program.

Each route consists of 10 wetland sites in Unit 1 which are visited by an observer three times annually: in early spring, late spring, and summer. At each site, the observer identifies the species present on the basis of their breeding season calls or songs, and makes a simple estimate of abundance for each species, using a Call Index Value of 1, 2, or 3. Miscellaneous observations can also be made from locations other than the permanent survey routes.

Frog and Toad Survey Route at Seney National Wildlife Refuge Unit 1 (NAD83).		
Stop Number	Latitude	Longitude
1	46.289866	-85.951416
2	46.289316	-85.957900
3	46.288916	-85.968916
4	46.285883	-85.964850
5	46.282333	-85.956783
6	46.278133	-85.953583
7	46.273883	-85.956466
8	46.271866	-85.96685
9	46.271883	-85.984200
10	46.284683	-85.985916

Survey methods are:

- 1) review the instructional material and data forms. You will receive a packet of materials that includes a cover letter, instructions, survey route description form, field data sheet, miscellaneous observations form, natural history information, a poster of all the native species of frogs and toads, and a tape or CD of frog and toad calls;
- 2) know the calls, phenology, and general ranges of Michigan anurans. All cooperators are required to have a recording (cd, usually) that includes the calls of all Michigan's anurans (frogs).

New and experienced observers will find it both helpful to review the recordings periodically and to take it along during surveys to help identify uncertain calls. New observers can learn the calls gradually by starting with those species that may be calling during the early spring survey period (e.g., Wood Frog, Spring Peeper, Leopard Frog), followed by those that begin calling in late spring (e.g., American Toad, Eastern Gray Tree Frog, Cope's Gray Tree Frog), and finally those species that begin calling during the summer (e.g., Mink Frog and Green Frog). It is highly recommended that new observers practice distinguishing calls in the field with the help of a more experienced observer.

Instructional materials also include a natural history packet which summarizes the geographic range, status, calls, biology, and morphology of each species in Michigan. Use this information to help determine which species are likely to occur in a given region, habitat, and season.

Although it is entirely possible that, for example, you may find an unusually early or late singer, or a breeding population outside a species' previously documented range, you should be aware that these unusual occurrences may require special scrutiny or verification.

- 3) run the route three times, once during each designated period. The timing of the survey with the phenology of frog calling is essential. In most areas, failing to make one of the three survey runs or failing to survey all 10 sites will severely limit or invalidate the entire year's data for monitoring purposes. Consider minimum air temperatures, especially for the early spring survey period, before running your route. When deciding whether to conduct a survey, consider the air temperature first. If air temperature is not approaching the minimum suggested temperature, wait until it does, but not much past the recommended dates listed below. The recommended dates serve as a guideline. The earliest time of the date range will be the most appropriate for the most southern parts of the state, and vice versa. For example, in the Upper Peninsula surveyors may have to wait until the end of April for appropriate temperatures to start the survey. Even though weather conditions determine good surveying times better than dates, there are date limits as well. Observers in the Upper Peninsula may go into the first week or two of July. **Allow at least two weeks between survey periods.**

Frog and Toad Survey Periods at Seney National Wildlife Refuge		
Survey Period	Approximate Range of Dates	Minimum Air Temperature
Early Spring	April 1 – May 5	45 degrees F (7 degrees C)
Late Spring	May 6 – June 10	55 degrees F (13 degrees C)
Summer	June 11 – July 10	65 degrees F (18 degrees C)

- 4) run surveys after dark, under favorable conditions. Choose an evening when air temperatures are above the minimums stated above and when wind is less than 8 mph. Warm, cloudy evenings with little or no wind and high humidity (even drizzle) are ideal. Humidity and cloud cover are not critical, but temperature is. A sudden drop in air temperature will cause most anurans to cease calling. If part way through a survey run you find that conditions deteriorate significantly (e.g. rain begins, temperature drops, or wind increases), stop the survey and complete it at the next possible opportunity, within two to three days if possible.
- 5) listen for calls at each site. Approach a listening point so as to cause minimal disturbance. The arrival of a car or a person may cause frogs to stop calling for a short time. Listen for a minimum of three minutes after the frogs start calling again, up to 10

minutes if necessary, to be certain of all calls. Listen to all calls audible from your listening point, not just those emanating from a particular pond, one side of the road, etc. Some calls may be drowned out by others, especially by the full chorus of spring peepers or chorus frogs. Where you suspect this to be the case, and after carefully listening and recording your initial data, you may try to silence the chorus by make a loud noise with horn, car door, or voice. Then listen for the less conspicuous species as the calling gradually resumes.

- 6) record your observations on the field data sheet. Include county, date, route number, observers' names and addresses, weather conditions, time and additional comments on noise levels, attempts to silence loud choruses, changes in habitat since previous visits, etc. At each site, record the call index value for each species heard, according to the following:

Frog and Toad Survey Call Index Values	
Value	Criteria
1	Individuals can be counted. There is space between calls (one to five individuals).
2	Calls of individuals can be distinguished but there is some overlapping of calls (six to 12 individuals).
3	Full chorus. Calls are constant, continuous, and overlapping, unable to count.

DATA ANALYSIS AND REPORTING

Return data sheets by 15 August. Keep a copy of the field data sheet for your records. **Do not** return a copy of your route description unless there are changes. Copies of the data are returned to: **Michigan Frog and Toad Survey, Michigan Department of Natural Resources, Wildlife Division - Natural Heritage Program, P.O. Box 30180, Lansing, MI 48909.**

Coordinator: Lori Sargent, Natural Heritage Specialist (517-373-9418)

MANAGEMENT ACTION THRESHOLDS

None required at this time.

DATA STORAGE PROCEDURES

A database (Excel file) should be kept and updated at the refuge each year, with a master file managed by the Michigan Department of Natural Resources, Wildlife Division - Natural Heritage Program.

LITERATURE USED

Michigan Department of Natural Resources, Wildlife Division - Natural Heritage Program.
Undated. Michigan Frog and Toad Survey Protocols. Lansing, MI.

EFFORT AND COSTS

Surveys, reporting, and preparation time take approximately 4 hr/night/person (three nights, 12 hr/person). Only one person needs do this survey, but it is often best to have more people and the survey provides an opportunity to take volunteers. Some miscellaneous fuel costs are associated with the survey (approximately \$30 total).