



## **North American Amphibian Monitoring Program**



**UMass  
Extension**

### **Massachusetts Procedures and Protocols**

#### **Overview**

The North American Amphibian Monitoring Program (NAAMP) seeks to involve volunteers in a long-term program to monitor amphibian populations across North America. Its first phase, a nationwide system to monitor calling amphibians (frogs and toads) was implemented in 1997. Patterned after the highly successful Breeding Bird Survey, the calling amphibian survey is designed to provide scientifically credible information on amphibian population trends and distribution that is necessary for effective conservation.

#### **Volunteer Involvement**

Like the Breeding Bird Survey, the Calling Amphibian Survey relies on knowledgeable volunteers willing to make a long-term commitment to monitor particular sampling routes. Individuals or teams of two people may adopt a route.

Volunteers must take and pass a web-based frog call quiz each year to verify that they can detect and correctly identify calling amphibians. To take the quiz, go to the Frog Quiz web site (<http://www.pwrc.usgs.gov/frogquiz/>) and click on NAAMP Quiz.

To prepare for the quiz use the “frog call lookup” feature of the Frog Quiz web site.

#### **Massachusetts Coordinator**

The Massachusetts Coordinator for the Calling Amphibian Survey is:

Scott Jackson  
Dept. of Environmental Conservation  
Holdsworth Hall  
University of Massachusetts  
Amherst MA 01003  
(413) 545-4743 (voice)  
(413) 545-4358 (fax)  
sjackson@umext.umass.edu (email)

## **Route Selection**

Routes are chosen by the Biological Resources Division of the U.S. Geological Survey (USGS). From a random starting point and using a randomly chosen direction, the routes are established to utilize secondary roads to the extent possible. These randomly chosen routes occasionally fall within remote areas and sometimes run through urban centers. In order to execute an unbiased sampling protocol, we will attempt to use all of the routes selected for Massachusetts unless it is clear that a particular route is not practical to monitor.

## **Modifying Routes**

Occasionally, pre-selected routes will need to be modified in order to make them viable. Care must be taken when modifying routes to preserve the unbiased sampling scheme being pursued by NAAMP. Following are some examples of problems that can be encountered with pre-selected routes, and suggested changes that can be made to adjust the routes.

### Problems

1. A portion of the designated route is impassable.
2. A portion of the route is unsafe to sample.
3. A portion of the route has a significant amount of noise interference (e.g. traffic, industrial noise, fast-flowing streams and rivers, frat parties, etc.)
4. Appropriate habitat does not exist along a significant portion of the route (e.g. highly urbanized areas)

### Suggested Changes

1. Bypass problem sections and begin the route farther along, as close as possible to the designated starting place.
2. Use as much of the original route as possible but use an alternate route to bypass the problem section. Choose an alternate route on secondary roads that run in the same general direction as the original.

Where most or all of a pre-selected route is affected by the above problems, the entire route may be dropped. It is important that we not reject routes or portions of routes simply because they are in areas that are highly impacted by development. Marginal sites will probably be the most sensitive indicators of population change (either recovery or decline). For these same reasons we also do not want to bypass portions of routes simply because calling amphibians are lacking. Provided that there are no significant safety issues or noise interference, we should continue to sample areas without calling amphibians as long as appropriate habitat exists. All route changes must be approved by the State Coordinator.

## **Establishing Stops along the Routes**

Beginning at the designated starting place, travel 0.5 mile and establish the first sampling stop. Additional stops should be established every 0.5 mile along the route until a total of 10 sampling stations are selected. A particular stop may be rejected if it would be unsafe to sample or is affected by significant noise interference. If a stop is rejected, do not select a site nearby to serve as the stop. Instead, proceed another 0.5 mile and establish the stop.

It is presumed that appropriate habitat exists at every stop. In some cases, appropriate habitat may not exist within listening distance. However, if there is the potential that appropriate habitat might be created in the future (beaver ponds, fire ponds, backyard ponds, detention ponds, etc.) the stops should still be monitored. Only in areas where it is absolutely clear that appropriate habitat does not exist and is unlikely to exist anytime in the foreseeable future (urban jungles) can we justify dropping stops or portions of routes due to lack of habitat. As stated above, stops may be rejected due to unsafe sampling conditions or excessive noise interference.

Any decision to reject a stop should be reviewed by the State Coordinator prior to being finalized.

## **Route Descriptions**

Once the route is properly laid out and the sampling stops identified, a description of each route should be prepared. Mark on the map provided the location of all stops and provide descriptions of each stop referencing available permanent landmarks (intersections, numbered telephone poles, etc.). Route descriptions should provide enough detail about the route and associated stops that another volunteer could easily find all the sampling stops along the route. Once the routes have been finalized, the position of stops on each route should be recorded using either a Global Positioning System (GPS) unit or by generating a kml file using GoogleEarth.

## **Sampling Periods**

Each route is to be sampled four times in the spring and early summer, once within each of the specified sampling windows listed below. The route should be run on nights when:

- temperatures are expected to remain above a given threshold for each window (see below);
- there is little or no wind ( $\leq 3$  on the Beaufort Scale) ; and
- there is no rain significant enough to affect your ability to detect calling frogs at a distance.

If you do not find a night with appropriate sampling conditions within a sampling window choose the next appropriate night after the window.

Physiographic Region	Window	Sampling Dates	Temperature Threshold	Target Species
Glaciated Coastal Plain	1	Floating	42 F	Wood frog, spring peeper, American toad
	2	April 24 to May 10	50 F	Spring peeper, American toad, pickerel and leopard frogs
	3	May 25 to June 9	50 F	Pickerel, leopard & green frogs, gray treefrog, Fowler's toad, Eastern spadefoot
	4	June 24 to July 9	55 F	Green frog, bullfrog, gray treefrog, Fowler's toad, Eastern spadefoot
Southern New England	1	Floating	42 F	Wood frog, spring peeper, American toad
	2	April 24 to May 10	50 F	Spring peeper, American toad, pickerel and leopard frogs
	3	May 25 to June 9	50 F	Pickerel, leopard & green frogs, gray treefrog, Fowler's toad, Eastern spadefoot
	4	June 24 to July 9	55 F	Green frog, bullfrog, gray treefrog, Fowler's toad, Eastern spadefoot
Central New England	1	Floating	42 F	Wood frog, spring peeper, American toad
	2	May 1 to May 17	50 F	Spring peeper, American toad, pickerel and leopard frogs
	3	June 1 to June 15	50 F	Pickerel, leopard & green frogs, gray treefrog, Fowler's toad, Eastern spadefoot
	4	July 1 to July 15	55 F	Green frog, bullfrog, gray treefrog, Fowler's toad, Eastern spadefoot
North Berkshire	1	Floating	42 F	Wood frog, spring peeper, American toad
	2	May 12 to May 25	50 F	Spring peeper, American toad, pickerel and leopard frogs
	3	June 9 to June 23	50 F	Pickerel, leopard & green frogs, gray treefrog
	4	July 8 to July 22	55 F	Green frog, bullfrog, gray treefrog

The first window – a “floating window” – is a two-week period commencing after the first warm rainy night of spring (March or early April). This is usually the “big” or “first” night of amphibian movement we have become accustomed to waiting for every year. For those years

that lack a clearly defined “big night,” begin this sampling window when you first detect strong choruses of wood frogs in the general area.

### **Sampling Procedures**

1. For each run, (one night in each of the four sampling periods), begin monitoring the route at least 30 minutes after sunset. Feel free to begin sampling later in the night if this will help avoid noise interference (e.g. rush hour traffic). However, the run must be completed by 1 a.m.
2. Record weather and other data requested at the beginning of the sampling run on the field data sheet. [starting time, wind, sky code (see front of the data sheet), and date of the last significant rainfall]. Wind should be reported according to the Beaufort scale (see front of the data sheet). Be sure to indicate whether the temperatures recorded are in Celsius or Fahrenheit. Here is a web site with rainfall data for MA that can help determine “# days since last rainfall” <http://www.erh.noaa.gov/box/dailystns.shtml>.
3. Beginning at the first sampling stop, turn off your engine, get out and walk at least 15 feet from your vehicle and carefully listen for five (5) minutes. Indicate whether background noise impaired your ability to hear frogs using the noise index on the front of the data sheet. If there is a major noise disturbance lasting for more than a minute, discontinue sampling until the noise interference has passed and then resume the five (5) minute listening period. If such a “time out” is taken, note it in the checkbox on the data sheet. The “time out” should be used only for major episodic noise disturbances (e.g. train passing nearby), not for background noise.
4. At each stop, record the presence of any calling amphibians using the following abundance codes. Record the appropriate code for each stop on the data sheet.

Code 1: if all calling frogs can be distinctly heard and easily counted.

Code 2: if there is some overlap of calls between individuals but not so much as to make an accurate count impossible

Code 3: if there is a loud and full chorus; the calls are constant, continuous, and overlapping for a given species.

5. At each stop record the presence of any night-calling birds by writing in the name of the bird species and indicating the number of calling individuals in the appropriate box(es).
6. At each stop record the start time for the listening period, air temperature, sky code and noise/disturbance level (see back of data sheet), and provide a check-mark in the appropriate column for the presence of snow on the ground.
7. At each stop record on the data sheet whether or not the moon or moonlight was visible during the monitoring period.
8. Continue the sampling for all stops until you have finished the entire route.

9. At the end of the route, record the ending time, air temperature, wind, precipitation, and sky code. On the back of the data sheet record any pertinent notes about the route or the sampling run. Information that might be useful to include in the notes include: a) any amphibian species seen but not heard, b) any change in habitat or land use since the previous year, c) general weather or climate conditions for the year to date, d) level of mosquito control in the area of your route, e) any aquatic weed control in the area, and f) any new habitat along the route (beaver ponds, detention basins, etc.).

### **Data Entry and Completed Data Sheets**

Volunteers may enter their data directly to the NAAMP database using an on-line data entry web site: <https://www.pwrc.usgs.gov/naamp/data/>. Alternatively, data sheets may be sent to the State Coordinator for data entry and archiving.

Whether or not you enter your data into the on-line database you must send completed data forms by July 31<sup>st</sup> to:

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Holdsworth Hall  
University of Massachusetts  
Amherst MA 01003

For more information go to our web site: <http://www.massnaamp.org>.