Marsh Monitoring Program

Participant's Handbook

For Surveying Amphibians

Revised 2008

BIRD STUDIES CANADA
ÉTUDES D'OISEAUX
understand appreciate conserve
comprendre apprécier conserver

MARSH MONITORING PROGRAM

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Environment Canada
Environnement Canada

About This Participants' Handbook

We want to clearly instruct participants in all aspects of the Marsh Monitoring Program (MMP). Please read this booklet thoroughly and adhere to the protocol carefully. If you have any questions, comments or recommendations, please give us a call at 1-888-448-2473 ext. 124.

Participant information is divided into three booklets: **Getting Started**, **Surveying Amphibians** and **Surveying Birds. Getting Started** provides background about the MMP, describes how routes are assigned/selected, what an MMP station is and how to place them on a route. **Getting Started** also covers the marsh habitat description protocol. The **Amphibian** and **Marsh Bird** survey booklets each contain detailed survey instructions, important tips to conduct a successful survey, and example forms to help you become familiar with each of the MMP survey types.

During your first survey year, you will receive the **Getting Started** booklet and one or both of the **Amphibian** and **Marsh Bird** survey booklets depending on the survey type(s) you have chosen. **It is a good idea to review these booklets prior to each survey season to refresh your memory and build confidence**.

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Front cover: Spring Peeper by Mary Gartshore

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AMPHIBIAN SURVEYS

Amphibians require shallow aquatic habitats for mating, egg incubation and larval development with the adults of many species continuing to live in or near water, traveling only small distances during their lifespan. This dependence on water is in part due to their porous skin, making them particularly susceptible to changes in local environmental conditions. These combined characteristics and the familiar mating calls of the males make amphibians ideal indicators of local ecosystem health and an easy and fun group to monitor for both the experienced and novice naturalist.

MMP amphibian surveys are limited to easily detected species (i.e., frogs and toads). The protocol for monitoring these amphibian species is largely based upon earlier work conducted in Wisconsin and Ontario and is now being used throughout North America. Be sure to read the instructions in this booklet carefully and listen to the Training CD prior to doing your first survey. In addition, we recommend that you visit the USGS Frog Quiz at http://www.pwrc.usgs.gov/frogquiz/ and conduct the "Ontario" self quiz available by clicking the Public tab.

Amphibians In The Great Lakes Basin

Each frog and toad species has a distinctive call that can be used in species identification. In the Great Lakes basin, there are 13 species of frogs and toads, several of which are widely distributed. Depending on your location, you will encounter some of the following species:

Common Name	Species Code	Latin Name
American Toad	AMTO	*Bufo amricanus*
Fowler's Toad	FOTO	*Bufo woodhousei fowleri*
Gray (Tetraploid) Treefrog	GRTR	*Hyla versicolor*
Cope's (Diploid) Gray Treefrog	CGTR	*Hyla chrysoscelis*
Spring Peeper	SPPE	*Pseudacris crucifer*
Chorus Frog	CHFR	*P. triseriata & P. maculata*
Blanchard's Cricket Frog	BCFR	*Acris crepitans blanchardi*
Wood Frog	WOFR	*Rana sylvatica*
Northern Leopard Frog	NLFR	*Rana pipiens*
Pickerel Frog	PIFR	*Rana palustris*
Green Frog	GRFR	*Rana clamitan s melanota*
Mink Frog	MIFR	*Rana septentrion alis*
Bullfrog	BULL	*Rana catesbeiana*

American Toad
The American Toad is common throughout the basin in a variety of habitats. **Call Description**: Long, drawn-out, high-pitched, musical trill lasting up to 30 seconds.

Fowler's Toad
While similar to the American Toad in appearance, the Fowler's Toad is restricted to sandy shoreline areas along Lake Erie and Lake Michigan. **Call Description**: High-pitched, nasal, non-musical trill ("wh-a-a-a-ah") lasting two to five seconds.

Gray Treefrog
The Gray Treefrog is most easily distinguished from Cope's Gray Treefrog by its call. The Gray Treefrog occurs throughout the basin and is more common than Cope's Gray Treefrog. **Call Description**: Musical, slow, bird-like trill, lasting up to 30 seconds. The call is slower and more musical than Cope's Gray Treefrog.

Cope's Gray Treefrog
Although identical in appearance to the Gray Treefrog, Cope's Gray Treefrog is found only in the southern and western regions of the basin in the United States. In Ontario, it is found only in the Lake-of-the-Woods area. **Call Description**: Faster, shorter, and higher-pitched trill than the Gray Treefrog's call, lasting up to 30 seconds.

Spring Peeper
The Spring Peeper is common and widespread throughout the basin. **Call Description**: Advertisement call is a short, loud, high-pitched peep, repeated every second. The peeper's aggressive call is a short, trill "purrreeek," usually rising in pitch at the end. This call can be confused with the call of the Chorus Frog, but can be distinguished by its trill-like quality.

Chorus Frog
Due to their similar calls, the Boreal Chorus Frog (*Pseudacris maculata*) and the Western Chorus Frog (*P. triseriata*) will be considered as a single species (Chorus Frog) for the purposes of this program. Chorus frogs are commonly found throughout the basin except for parts of northern Lakes Huron, Michigan and Superior. **Call Description:** Short, ascending trill-like "cr-r-e-e-e," resembling the sound of a thumb drawn along the teeth of a comb, repeated every couple of seconds.

Blanchard's (Northern) Cricket Frog
Blanchard 's Cricket Frog is a highly localized species, found at the southwestern end of Lake Erie and the southern half of Lake Michigan in the United States. In Canada, historically, it has only been found on Pelee Island in Lake Erie. **Call Description:** A fast, repeated clicking, like two pebbles being struck together, increasing in speed then decreasing, over a few seconds.

Wood Frog
The Wood Frog is common throughout the basin but can only be heard for a short time very early in spring calling in wet wooded areas. **Call Description**: Short, subtle chuckle, like ducks quacking in the distance.

Northern Leopard Frog
The Northern Leopard Frog is common and widespread throughout the basin. **Call Description**: Short, rattling "snore" followed by guttural chuckling ("chuck-chuck-chuck"), sounding like wet hands rubbing a balloon. Although shorter in length, its snore can be mistaken for that of a Pickerel Frog.

Pickerel Frog
Similar to Northern Leopard Frogs in appearance, Pickerel Frogs have a smaller range around the Great Lakes. Though widespread throughout most of the basin, they are quite localized, and are often found in association with cold-water streams. **Call Description**: Low-pitched, drawn-out snore, increasing in loudness over a couple of seconds.

Green Frog
The Green Frog is common throughout the Great Lakes. **Call Description**: The advertisement and territorial call is a short, throaty "gunk" or "boink," like the pluck of a loose banjo string, usually given as a single note. It may also give several stuttering, guttural calls of "ru-u-u-ng," followed by a single staccato "gunk!" The stuttering call can be mistaken for that of a Bullfrog, although the Green Frog's call is shorter and not as rhythmic nor as deep.

Mink Frog
The Mink Frog is primarily a northern species found around Lake Superior and the northern parts of Lakes Michigan and Huron, although its range does extend east to the St. Lawrence River. **Call Description**: Rapid, muffled "cut-cut-cut," like a hammer striking wood; the chorus sounds like horses' hooves running over cobblestone.

Bullfrog
The Bullfrog is common and widespread in the basin except for northern Lake Superior. **Call Description**: Deep bass, two syllable "rrr-uum" or "jug-o-rum."

Spring Peeper
- by Christine Friedrichsmeier

Gray Treefrog
- by Christine Friedrichsmeier

Pickerel Frog
- by Christine Friedrichsmeier

When Should I Conduct My Amphibian Surveys?

In order to be assured that frogs and toads are actually going to be calling, you need to pay close attention to weather conditions and choose an appropriate time to survey. If it is too cold, dry or windy, calling activity will be greatly suppressed. Collection of the data under the proper conditions is quite important to ensure a measure of standardization between surveys.

- Each route is to be surveyed for calling amphibians **three times** during the spring and early summer. Surveys should be conducted **at least 15 days apart**. By conducting three surveys, you should be able to detect all species present. The first survey is timed to monitor species that breed very early (e.g., Chorus Frog, Wood Frog and Spring Peeper). The second survey should coincide with "optimum" breeding for Spring Peeper, American Toad, Northern Leopard Frog, Pickerel Frog and, where they occur, Fowler's Toad. The third survey will monitor late-season breeders, Gray Treefrog, Cope's Gray Treefrog, Mink Frog, Green Frog and Bullfrog (see the chart on page 4).

- An amphibian's body temperature changes as its environment's (e.g., air and water) temperature changes. Frogs and toads always require an air temperature **greater than 5°C (41°F**) to elicit calling activity. "Late-season" frogs (e.g., Bullfrogs and Green Frogs) don't begin their calling activity until temperatures are even higher. Therefore **night-time air temperature should be greater than 5°C (41°F) for the first survey, 10°C (50°F) for the second survey and 17°C (63°F) for the third survey.**

- **Each station is surveyed for 3 minutes**. Routes are to be surveyed in their entirety, in the same station sequence, starting at about the same time, on all visits.

- In **southern and central regions** of the Great Lakes basin, surveys can begin **one half hour after sunset and end before midnight**. Because of "longer days" during the summer months in the northern regions of the basin, surveys that begin one half hour after sunset could continue beyond midnight! Therefore, in **northern regions**, surveys can start at **22:00 h** in the summer even if it isn't dark then.

- Because dry air or strong wind dries out an amphibian's skin, calling activity is reduced. Strong winds also interfere with your ability to hear. Do your survey only when the wind strength is Code 0, 1, 2, or 3 on the Beaufort Wind Scale (see Appendix 4). If the wind is strong enough to raise dust or loose paper and move small tree branches, then you should wait for a calmer evening. Ideally, there should be no wind.

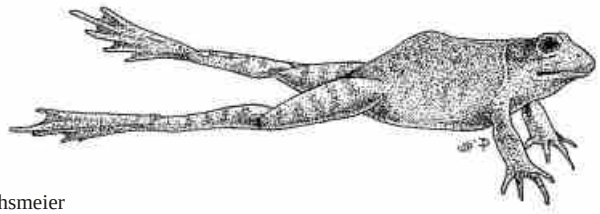
Mink Frog
- by Christine Friedrichsmeier

Blanchard's (Northern) Cricket Frog
- by Christine Friedrichsmeier

Amphibian Survey Guidelines

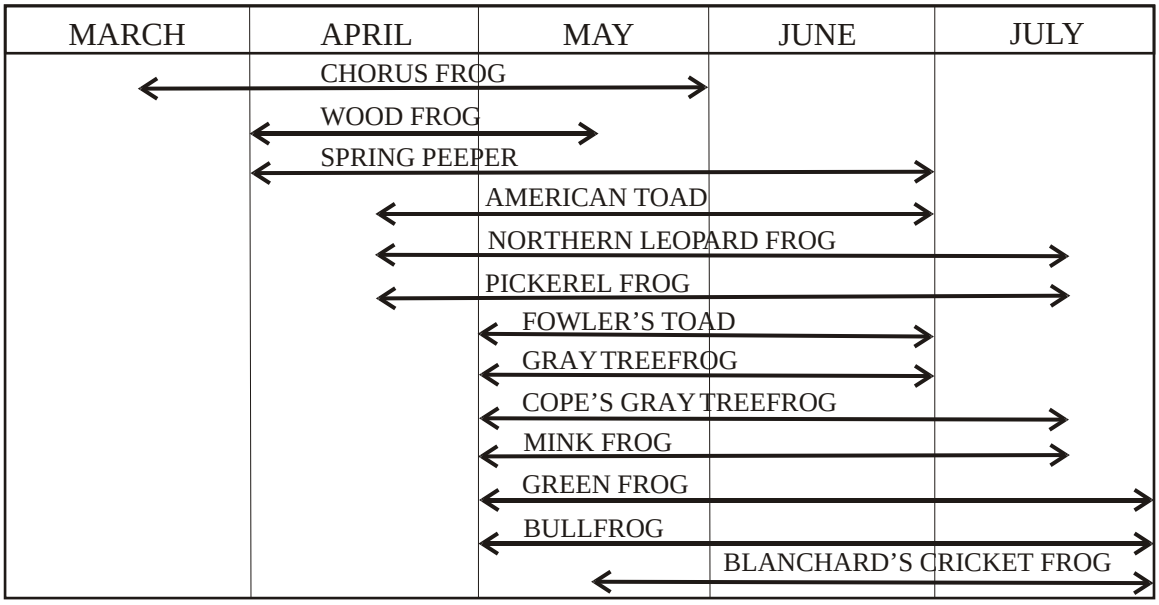
You may conduct your survey before the dates given below if weather conditions are right. These dates are provided **only** as a **guideline**. Remember, **air temperature and lack of wind are the most important factors** to pay attention to when deciding when to conduct your surveys.

	Survey #1	Survey #2	Survey #3
South (south of the 43rd parallel)	1 - 15 April	1 - 15 May	1 - 15 June
Central (between the 43rd and 47th parallels)	15 - 30 April	15 - 30 May	15 - 30 June
North (north of the 47th parallel)	1 - 15 May	1 - 15 June	1 - 15 July



Bullfrog
- by Christine Friedrichsmeier

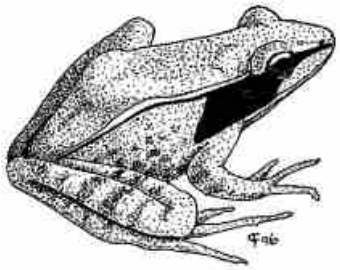
General Breeding Period for Frogs and Toads in the Great Lakes Basin



Other Considerations

Nights that are damp, foggy or have light rain falling are ideal, especially for your first survey. Avoid persistent or heavy rainfall. Early in the season, it is best to survey shortly after the first or second **warm** spring shower. Later, choose a night with a warm temperature. Watch the local news or weather channel, or phone your local airport weather office to get weather forecasts. Ideally, you should be prepared to go out on any evening that is suitable. Plan ahead!

Early in the season, weather conditions are unpredictable. Nights can cool off quickly to temperatures that are below optimal for calling frogs. If conditions deteriorate during your survey, cancel the survey and repeat it on the next suitable night.



Wood Frog
- by Christine Friedrichsmeier

Chorus Frog
- by Christine Friedrichsmeier

"Explosive Breeders"

Amphibians take their cues from the environment as to when to start migrating to breeding sites and when to initiate breeding. Some species (e.g., Wood Frogs) are known as "explosive" breeders. Among these species, most males are apt to migrate all on one night to breeding ponds as soon as conditions are right. Males may call for only a few nights and most breeding is done in one evening. It is best to survey on one of the first few suitable evenings during the allotted time, since frog and toad activity begins as soon as the weather permits. If you delay too long, you could miss some species.

Conducting the Survey

Getting Started

Check to make sure that you have your **Amphibian Data Forms,** a small **flashlight or headlamp** that allows you to keep your hands free, a **pen or pencil, watch or timer** (preferably one with an alarm), and a **clipboard** (if desired). If you have previous years' Habitat Description Forms, bring along a **copy** to help you relocate your stations. A thermometer, compass, spare pens, mosquito repellent and this instruction booklet are other useful items. It's best to be prepared!

See the Spring Refresher on the inside back cover for a checklist. Since you will be conducting these surveys in the dark, you should bring an assistant along for safety, company and to share in the experience. This person can help you find the stations, document some kinds of information (such as weather conditions) and hold your flashlight. **However, your assistant is not to help you identify or tally amphibians!** More than one observer will bias the results.

Before you start the survey, fill in the information required in the top section of the Amphibian Data Form (see example on page 8). Please use the format specified in the sample form to minimize data entry errors. Record the route number and observer number (may not be available during your first survey season), route name, observer name, the date, and the visit number (#1, 2 or 3).

All weather information can be easily estimated. Determine the wind speed according to the Beaufort Scale (Appendix 4). Cloud cover is estimated as covering so many 10ths of the sky (e.g., if it's completely starry with no cloud cover, 0/10 of the sky will be covered). If possible, carry a thermometer and record the air temperature at the start of your survey. Be sure to **specify** whether you are recording the temperature in degrees Fahrenheit or degrees Celsius. If you don't have a thermometer, record the air temperature from a reliable source (e.g., the local weather station or an outdoor thermometer at your home).

Use the Remarks section to record any assistants' names, problems encountered (e.g., "I heard a call I couldn't identify"), and other comments you might think useful (e.g., "Lots of activity tonight!").

Please fill in all of the blanks at the top of the form.

Counting Amphibian Calls

Before going into the field, it is important that you are familiar with the calls of all amphibian species found in the Great Lakes basin, not just the ones normally found in your region. The distribution of some amphibian species is still not very well known. The amphibian tracks of the Training CD describe how to identify each species' call and instruct you on how to measure the intensity and number of individuals calling using the **Call Level Code** and **Abundance Count**.

Call Level Code and Abundance Count

The amphibian survey uses three **Call Level Codes** to categorize the intensity of calling activity. For two of these categories, we also ask that you count or estimate the number of calling amphibians; this is an **Abundance Count**. Use the following Call Level Codes for **each species** detected during your surveys (see sample Amphibian Data Form on page 8):

Code 1 - Individuals can be counted; calls not simultaneous. Assign this number when individual males can be counted, and when the calls of individuals of the same species do not **start at the same time**. For the Abundance Count, record the number of **individual frogs** of each species calling beside the Code.

Code 2 - Calls distinguishable; some simultaneous calling. This code is assigned when there are a few males of the same species calling **simultaneously**. However, with a little work, individual males can still be distinguished. In this case, an exact Abundance Count can't be tallied, but you are able to **reliably estimate** the number of individuals present, based on their locations and/or by the differences in their voices.

Code 3 - Full chorus; calls continuous and overlapping. This value is assigned when you encounter a full chorus. When there are so many males of one species calling that all the calls sound like they are overlapping and continuous (like a blur of sound), then you are hearing a full chorus. There are too many overlapping calls to allow for any reasonable count or estimate. Hence, there is no need to record an Abundance Count.

Mapping and Recording Amphibians

Amphibian surveyors use their best judgment to distinguish whether each species detected is calling from inside the 100-metre (110-yard) sample area, from outside the sample area, or from both inside and outside. We recognize that the 100-metre (110-yard) radius sample area cannot be accurately determined at night. Don't worry about not knowing exactly where the station boundary is; make the best estimate you can.

A separate Data Form set is used for each visit to your route. Each data form set includes visit information, a handy look-up section on the last page and eight station maps. Each station map represents the semi-circular sample area of a station with a mid-point and arc drawn inside for reference. At each station, record what direction you are facing in the small box on the map of the sample area (e.g., "23 NNE," or just "NNE" if you can't take a compass bearing), and record the time you start your station's survey (24 hour time) in the top right-hand box.

At each station, once you have everything ready, wait quietly for at least one minute to allow the frogs and toads to start calling again after being disturbed by your presence. While waiting, listen to your surroundings and assess the level of background noise. Assign a **Background Noise Code** to that station and record it in the box beside the station map (see Appendix 3 for background noise codes). Background noise can affect your ability to detect and identify species, so it is important this is recorded for each station on your route.

After this initial settle-down period, set your timer, and **survey for 3 minutes**. Record on the map all species heard calling within a semi-circle in front of you. Using the appropriate four-letter species code (see page 1), map the relative position of **each** individual or chorus on the Amphibian Data Form (see the sample Data Form). Under each species code, record the Call Level Code. For Codes 1 and 2, also record the number of individuals that you count or estimate are calling, using a dash to separate the two measures of abundance (e.g., "AMTO/1-3" indicates a Call Level Code of 1 and that you heard 3 different American Toads calling). Recall that you do not need to record an Abundance Count beside Code 3 since this code means that there are too many individuals calling to accurately estimate numbers.

Using the table to the left of the station diagram on the data form, enter a checkmark in the “In” column if any individuals of a species is calling from *inside* the station boundary. If any individuals of a species are calling from *outside* the station boundary, check the “Out” column. If a species is calling from *inside and outside* the station boundary, check both “In” and “Out” columns for that species.

After your survey is completed, take a few moments and review your form to ensure that all fields are filled out completely and correctly. Re-assess your background noise code: did the level of noise change? If necessary, cross-out the original background noise code and print the correct code beside it.

Summarizing Amphibian Data

Transcribe your data from the **Amphibian Data Forms** to the **Amphibian Route Summary Form** as soon as possible after completing your survey. Don't let this additional paperwork wait too long; it is best done immediately after surveying, while everything is fresh in your mind. The sample Route Summary Sheet (see page 10) shows how the data from the sample Data Form (on page 8) would be recorded. Please study both of these sample sheets. Call us if you have any questions.

One Route Summary Form is used to summarize the information from all three visits to your route. First, fill in the top part of the sheet with your name, observer number, and route number. Your observer number and route number are printed on the address label on the MMP Contact Sheet. If your route number or observer number are not printed on the Contact Sheet, or if you are surveying a different route than

Marsh Monitoring Program - Amphibian Data Form

Return by 31 July

Please write legibly (in pen).

MARSH MONITORING PROGRAM

VISIT INFORMATION

Route #: ON499 Route Name: Mud Lake Marsh

Observer #: 18649 Observer Name: Kathy Jones

Visit #: 1 Day: 15 Month: 04 Year: 2008

Cloud Cover (10th): 7 Temperature (°C or °F): 15C Beaufort Wind Scale (0-6): 1

Precipitation (check one): ◯ None/Dry ✓ Damp/Haze/Fog ◯ Drizzle ◯ Rain

CALL LEVEL CODES

Code 1: Calls not simultaneous, number of individuals can be accurately counted

Code 2: Some calls simultaneous, number of individuals can be reliably estimated

Code 3: Full chorus, calls continuous and overlapping, number of individuals cannot be reliably estimated

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Species	In*	Out**
AMTO		
BCFR		
BULL		
CHFR	✓	
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		✓
NLFR		
PIFR		
SPPE	✓	✓
WOFR	✓	

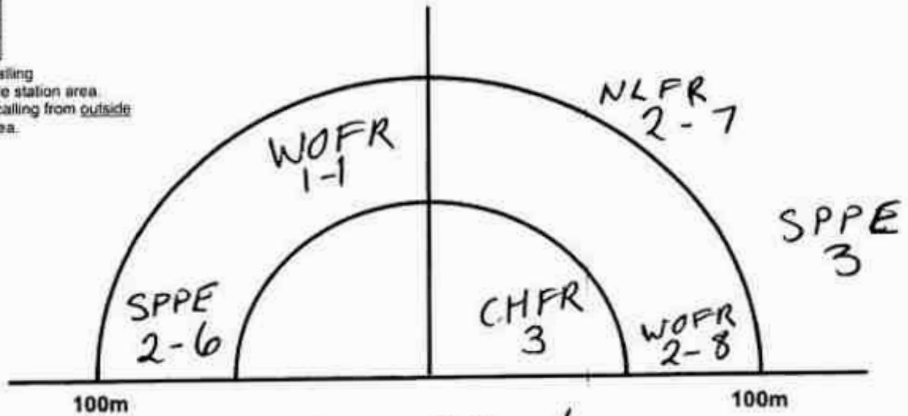
* Check if species is calling from inside 100-metre station area.
** Check if species is calling from outside 100-metre station area.

Station A

NNE

23°

Station Start Time (24 hr):	2245
Background Noise Code (1-4):	3



Near Road - lots of traffic!

indicated, please contact the MMP office. If it is your first year surveying, or you are surveying a new route, these numbers will be assigned during data processing at the end of the first season. Fill in the appropriate circle next to the "Has the habitat on your route changed from previous years?" question. Choose "N/A" if this is the first year you have surveyed this route.

Below the route information section there are boxes for visit information, background noise codes and visit data. In the visit information section, for each visit, please record the date it was conducted, wind scale number, cloud cover, air temperature and the appropriate precipitation category. In the summary box for noise codes enter the background noise codes you recorded during your survey visits in the appropriate station and visit number. Please only fill in boxes for stations that you surveyed, and leave all others blank.

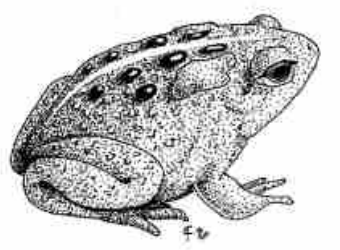
The remainder of the Route Summary Form is devoted to your survey data from each of the three visits. In the main visit table there is a column for each potential station on your route. Fill in the circle below the station letter of each station you surveyed during that visit and record the station start time even if you did not observe any frogs or toads. If this circle is not filled in, the scanner will not read the data associated with that station.

For each station and visit, study your mapped observations and determine the **highest** Call Level Code for each species. Enter this code beside the species name in the column labelled **CC** (for "Calling Code"). Next, add up **all** the individuals counted (inside + outside) for each species and enter this number in the adjacent column labelled **Count**. For example, if you heard two groups of American Toads (1-3 and 2-6), you would enter a Code of 2 and a Count of 9. Remember, if you enter a Code 3 then there is no count to record since there are too many individuals to count. If a species was calling only from inside the station boundary, **or** if a species was calling from both inside *and* outside the station boundary, completely fill in the circle in the "In" column. If a species was calling only from outside the boundary, leave the "In" column empty.

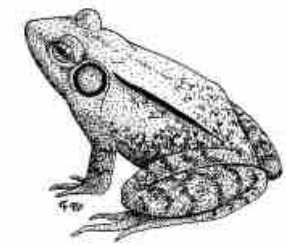
You'll find it very useful to tick off the Mapped Observations on your Amphibian Data Forms as you transfer them to your Route Summary Form. This helps ensure that you haven't counted the same observation twice or forgotten to transcribe a record. Since we will be scanning in your data directly from your Route Summary Form, it is important that you **double-check** to be sure that your form is complete and correct!

Returning Your Data to Bird Studies Canada

You should return all original copies of your MMP data forms (contact/route, bird, amphibian and habitat) in a single package by July 31st of the survey year to the address listed at the back of this booklet. It is very important that you keep a photocopy of **all** of your forms for your future reference and to guard against them getting lost in the mail. Alternatively, you may enter your survey data into Bird Studies Canada's online data-entry webpage. However, you will still need to mail your forms to BSC for quality control purposes. Please contact MMP staff for details.



Fowler's Toad
- by Christine Friedrichsmeier



Green Frog
- by Christine Friedrichsmeier

Marsh Monitoring Program - Amphibian Route Summary Form

Route # 0,N,4,9,9 | Observer # 1,8,6,4,9 | Observer Name: Kathy Jones | Year: 2,0,0,8

*Please print with BLOCK CAPITALS, and mark each individual choice by filling in the corresponding circle. Please use pen (not felt tip).

**Has the habitat on your route changed from previous years? ○ Yes ● No ○ N/A

Visit Information:

	Day	Month	Wind Scale	Cloud Cover (10ths)	Temp		Precipitation (fill in one per visit)
Visit 1	1,5	0,4	1	,7	1,5	● °C ○ °F	○ None/Dry ● Damp/Haze/Fog ○ Drizzle ○ Rain
Visit 2	0,7	0,5	2	1,0	1,6	● °C ○ °F	○ None/Dry ○ Damp/Haze/Fog ● Drizzle ○ Rain
Visit 3	1,0	0,6	2	,0	2,0	● °C ○ °F	● None/Dry ○ Damp/Haze/Fog ○ Drizzle ○ Rain

Background Noise Code (0-4)

Station Letter	A	B	C	D	E	F	G	H
Visit 1	3	1	0					
Visit 2	2	1	1					
Visit 3	2	0	0					

Notes: Please fill the "**Yes**" circle for each station surveyed during the visit, please leave blank for any station not surveyed.
If no species were heard place a "0" in the count field for "No Calls Heard".
In column "**CC**" please print the maximum **Calling Code** (1-3) for the species.
For **CC** 1 and 2, please print the total combined number of individuals heard under **Count**.
Fill in the "**In**" circle if an individual of the species was calling within 100m.

Visit 1

Station Letter	A			B			C			D			E			F			G			H		
Station Surveyed	● Yes			● Yes			● Yes			○ Yes			○ Yes			○ Yes			○ Yes			○ Yes		
Station Start Time (24 hr)	2,2,4,5			2,2,5,5			2,3,0,5																	
Species Name	CC	Count	In	CC	Count	In	CC	Count	In	CC	Count	In	CC	Count	In	CC	Count	In	CC	Count	In	CC	Count	In
No Calls Heard (Code 0)			○			○			○			○			○			○			○			○
American Toad			○			○			○			○			○			○			○			○
Blanchard's Cricket Frog			○			○			○			○			○			○			○			○
Bullfrog			○			○			○			○			○			○			○			○
Chorus Frog	3		●	2	,6	●	3		○			○			○			○			○			○
Cope's Gray Treefrog			○			○			○			○			○			○			○			○
Fowler's Toad			○			○			○			○			○			○			○			○
Gray Treefrog			○			○			○			○			○			○			○			○
Green Frog			○			○			○			○			○			○			○			○
Mink Frog			○			○			○			○			○			○			○			○
Northern Leopard Frog	2	,7	○			○			○			○			○			○			○			○
Pickerel Frog	3		●			○			○			○			○			○			○			○
Spring Peeper			○	2	1,0	○	3		●			○			○			○			○			○
Wood Frog	2	,9	●	2	,7	●	1	,3	○			○			○			○			○			○

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APPENDIX 1: Safety First!

Your surveys should be an enjoyable experience, which also means a safe experience. Ultimately, safety is your responsibility, and if you are ever concerned about your safety, **don't survey**. But, to assist you, keep the following guidelines in mind.

General Survey Safety:
Carry a flashlight, whistle, cell phone, bug repellent, and spare batteries
Arrange a designated check-in time with a friend or relative
Bring a Partner!

Site Safety:
Make sure your site is accessible in low light conditions
Avoid local 'hang-out' spots or unsafe neighbourhoods

Road Routes:
Wear bright or reflective clothing
Be aware of traffic
Park safely off-road or use reflective cones
Follow all traffic laws

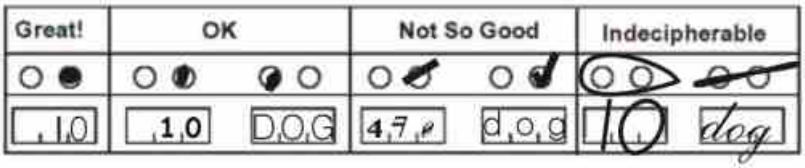
Boat Routes:
Wear a lifejacket
Bring bailer(s)
Have lights for the bow and stern of your boat
Follow all marine regulations
Be aware of boat traffic

BRING A PARTNER and IF IN DOUBT, DON'T SURVEY

APPENDIX 2: Tips For Filling In Scannable Form

Using scannable forms decreases data entry time, thereby decreasing program costs and allowing more time for other important activities. Although the computer scanning program can decipher most writing, following the simple guidelines provided below will ensure accurate and efficient data processing.

- **PLEASE USE PEN;** please don't use pencil or felt tip pen, these are poorly read by the scanner
- **PLEASE PRINT;** preferably using block letters. The scanner does not easily decipher stylised writing
- **NUMBERS AND TEXT;** place one character in each box and keep within the box lines/ticks. Close 0's and O's
- **PLEASE FILL IN CHOICE CIRCLES;** avoid using checkmarks and fill in all applicable choices individually
- **MISTAKES HAPPEN;** you can mark an error with an "X" and fill in the correct value or use correction fluid. If your mistake is large and you run out of space, place your correction in the nearest comment box, BUT include the section number to which the correction relates (e.g., "I messed up on Visit 1, Station A: there were 10 Barn Swallows not 100").
- **LEGIBILITY;** if you think your form is no longer legible, contact us and we will mail you a second copy or email you an Adobe Acrobat version.



Some Frequently Asked Questions:

Can the forms be stapled? YES. The four reference marks (four corners of this page) and bar code or a scanning form identification number (lower right corner) must remain undamaged (don't staple through them).

Can I photocopy the forms? YES. Teleform works best with the original document. Please send original forms to BSC and keep copies for yourself. **Do not** increase or decrease the size of the document when you photocopy them, this may prevent them from being scannable.

Can I use an Adobe Acrobat version of the form? YES. Before printing, ensure that the "fit to page" printer option is **not** checked. The "fit to page" option may shrink the form enough that it cannot be scanned.

APPENDIX 3: Background Noise Codes*

Index	Description
0	No appreciable effect (e.g., owl calling)
1	Slightly affecting sampling (e.g., distant traffic, dog barking, car passing)
2	Moderately affecting sampling (e.g., distant traffic, 2-5 cars passing)
3	Seriously affecting sampling (e.g., continuous traffic nearby, 6-10 cars passing)
4	Profoundly affecting sampling (e.g., continuous traffic passing, construction noise)

* Based on the Massachusetts Noise Disturbance Index

APPENDIX 4: Beaufort Wind Scale

Number	Wind Speed		Indicators
	Kilometers per hour	Miles per hour	
0	0-2	0-1	**Calm**, smoke rises vertically
1	3-5	2-3	**Light air movement**, smoke drifts
2	6-11	4-7	**Slight breeze**, wind felt on face
3	12-19	8-12	**Gentle breeze**, leaves and small twigs in constant motion
4*	20-30	13-18	**Moderate breeze**, small branches are moving, raising dust and loose paper
5*	31-39	19-24	**Fresh breeze**, small trees in leaf beginning to sway, crested wavelets form
6*	40-50	25-31	**Strong breeze**, large branches in motion

* Unacceptable wind strengths for bird and amphibians.

SPRING REFRESHER

When to Conduct Your Surveys

Bird Surveys

- Two visits between May 20 and July 5 at least 10 days apart
- Survey time (morning or evening) is determined at the time of route creation and cannot be changed once a route is established.
- Morning surveys begin as early as 30 minutes before sunrise and end no later than 10:00 h
- Evening surveys begin no earlier than 4 hours before sunset and must be completed by dark
- Weather guidelines: good visibility, warm temperatures (at least 16 °C or 60 °F), no precipitation and little wind.

Amphibian Surveys

- Three visits between April and June at least 15 days apart
- In most of the Great Lakes basin, surveys begin no earlier than one half hour after sunset and end before midnight. In northern regions, surveys can start at 22:00 h (i.e., 10:00 p.m.)
- Temperature guidelines: greater than 5 °C (41 °F), 10 °C (50 °F) and 17 °C (63 °F) for surveys 1, 2 and 3 respectively.
- Weather guidelines: little wind, damp nights with no or little rain (avoid persistent or heavy rainfall)

Field Checklist

Both Survey Types

- Data forms
- Pen
- Watch or timer (preferably one with an alarm)
- Habitat Description Forms (to fill in or to help relocate your sites)

Bird Surveys Only

- Marsh bird broadcast CD (2008 version or newer)
- Binoculars
- Portable call broadcast unit (e.g., portable CD player with amplified speakers)

Amphibians Only

- Small flashlight or headlamp

Optional

- Compass or G.P.S. unit
- Clip board (if desired)
- Field guide
- Thermometer
- Spare batteries
- Spare pen
- Instruction booklet or Bird Survey Reference Card
- Insect repellant
- Cell phone

Return to Bird Studies Canada:

Marsh Bird Surveys

Originals of …

- MMP Contact and Route Information form - 1 per route
- MMP Bird Survey Form - 2 per station (1 for each survey visit)
- MMP Habitat Description Form - 1 per station

Amphibian Surveys

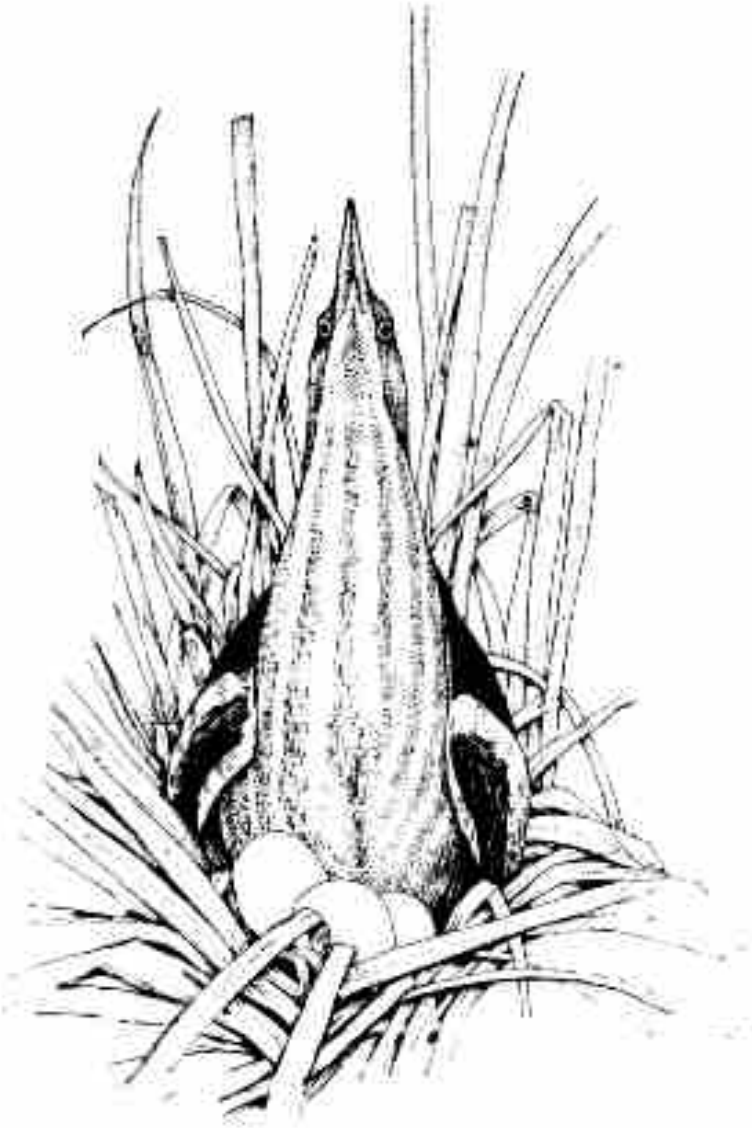
Originals of …

- MMP Contact and Route Information form - 1 per route
- MMP Amphibian Route Summary form 1 per route
- MMP Amphibian Data Form Set - 3 per route (1 for each survey visit)
- MMP Habitat Description Form - 1 per station

By July 31. Contact us if you have any questions or comments.

MAJOR SUPPORTERS AND PARTNERS OF THE MARSH MONITORING PROGRAM:

Bird Studies Canada
Environment Canada – Canadian Wildlife Service
U.S. Environmental Protection Agency



For more information about the Marsh Monitoring Program contact:

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