

*The Couchiching
Conservancy* 

EVENING FROG MONITORING MANUAL



Field kit list:

Required	Recommended
<ul style="list-style-type: none"><input type="checkbox"/> Phone or tablet: with reference frog calls on EdApp or as downloaded mp3 files<input type="checkbox"/> Landscape App (sync before going out) or a GPS device<input type="checkbox"/> Headphones<input type="checkbox"/> Monitoring sheets<input type="checkbox"/> This protocol manual<input type="checkbox"/> 2 Pencils/pens<input type="checkbox"/> Emergency information sheet<input type="checkbox"/> Thermometer<input type="checkbox"/> Flashlight or headlamp (200 m range recommended)	<ul style="list-style-type: none"><input type="checkbox"/> First aid kit (with tick kit)<input type="checkbox"/> Water<input type="checkbox"/> Bug spray<input type="checkbox"/> Clipboard<input type="checkbox"/> Snack<input type="checkbox"/> Binoculars or Camera with a zoom<input type="checkbox"/> Whistle<input type="checkbox"/> Amphibian Identification Guide<input type="checkbox"/> Measuring tape

Recommended clothing:

<ul style="list-style-type: none"><input type="checkbox"/> Rubber Boots<input type="checkbox"/> Long Pants – tuck pants into socks and shirt into pants for protection from ticks.<input type="checkbox"/> Bug Jacket and Gloves<input type="checkbox"/> Safety vest – for roadside sites
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Cover Photos:

Top Left: A volunteer frog monitoring by Aiesha Aggarwal, Top Right: Spring Peeper by Toby Rowland, Bottom Left: Gray Treefrog by David Hawke, Bottom Right: American Toad by Toby Rowland

Couchiching Conservancy Frog & Toad Monitoring Program

March 5, 2024

This program is adapted from Birds Canada's Marsh Monitoring Program (2008).

This manual was created by the Couchiching Conservancy. Contributors: Aiesha Aggarwal, David Hawke, Dorthea Hangaard, Meagan Coughlin

Introduction: Frogs are good indicators of environmental change. Their porous skin makes them vulnerable to pollutants and changes in water and soil chemistry. Land use change (habitat loss/degradation), pollution from pesticides and other chemicals, disease, and climatic change are driving factors in amphibian population declines. These amphibians are best located during their courtship calling, usually in spring. By tallying and mapping their occurrences annually, we can track their presence and possible shifts in population.

As the climate conditions or site/habitat conditions change, there may be evidence of a shift in calling times, and of successful breeding.

The goals of this monitoring program are to:

1. Determine presence or absence of Frog & Toad species at nature reserves and easements in the region
2. Monitor frog species richness and occupancy over time
3. Look for relationships between habitat, climate, and frog/toad occurrences.
4. Use the information collected to assist with management of properties.
5. Engage Conservancy volunteers in a long-term, science-based project that has a repeatable system.
6. Share the data with other interested organizations and academic researchers.

This guide outlines the protocols we want you to follow to ensure consistent research.

PART 1. Frog ID

Species	Code	Call Description
Western Chorus Frog* <i>Pseudacris triseriata triseriata</i>	CHFR	short, ascending trill-like “cr-e-e-e”, resembling the sound of a thumb drawn along the teeth of a comb, repeated every couple of seconds.
Wood Frog <i>Rana sylvatica</i>	WOFR	short, subtle chuckle, like frogs quacking in the distance.
Spring Peeper <i>Pseudacris crucifer</i>	SPPE	short, loud, high-pitched peep, repeated every second. Aggressive call is a short, trill “purreeeek” rising in pitch at the end (Can be confused with Chorus Frog, but can be distinguished by its trill-like quality.)
Northern Leopard Frog <i>Rana pipiens</i>	NLFR	short, rattling “snore” followed by guttural chuckling, sounds like wet hands rubbing a balloon.
Pickerel Frog <i>Rana palustris</i>	PIFR	low-pitched drawn out snore, increasing in loudness over a couple of seconds
American Toad <i>Bufo americanus</i>	AMTO	long, drawn-out high-pitched trill, lasting up to 30 seconds.
Gray Treefrog <i>Hyla versicolor</i>	GRTR	musical, slow, bird-like trill, lasting up to 30 seconds.
Green Frog <i>Rana clamitans melanota</i>	GRFR	short, throaty “gunk”, usually given as a single call. May also give several stuttering, guttural calls of “ru-n-n-n-g” followed by a single staccato “gunk”. (Bullfrog calls are deeper and rhythmic.)
Mink Frog <i>Rana septentrionalis</i>	MIFR	rapid, muffled “cut-cut-cut” like a hammer striking wood; the chorus sounds like horse’s hooves running over cobblestone.
American Bullfrog <i>Rana catesbeiana</i>	BULL	deep bass, two syllable “RR-umm” or “jog-o-rum”.

* Western Chorus Frog is listed with COSEWIC as federally Threatened.

PART 2: Plan Your Monitoring Visit

Until 2024, The Couchiching Conservancy timed visits based on air temperature. In recent years, spring temperatures have become erratic and unpredictable. Day of the year has become a better predictor of species presence, possibly due to its link to water temperature. Monitoring on set days of the year makes the data more comparable between years, but does not allow us to see when frogs begin calling. For this reason, we are adding a “pre-visit”, a survey done when frogs first start calling each year.

2.1 Date of Visits: Different species of frogs call at different times of the year. It is **essential** to make **all 4 monitoring visits** so that you have a chance of detecting all possible species. Missing even one visit will make the rest of your data less useful for studies of occupancy and species richness.

- Pre-Visit: March to early April. The Couchiching Conservancy will notify you when frogs begin calling in the region. Making a visit at this time will contribute to studies of climate and shifts in the start of the frog call season. If frogs don't begin calling until mid-April, then this visit isn't necessary. Expected Species: Western Chorus Frog, Wood Frog
- Visit 1: April 14-21 Expected species: Chorus Frog, Wood Frog, Spring Peeper
- Visit 2: May 14-21 Expected species: Spring Peeper, American Toad, Northern Leopard Frog, Pickerel Frog
- Visit 3: June 14-21 Expected species: Gray Treefrog, Mink Frog, Green Frog, Bullfrog.

2.2 Time of Visit: Most species of frog in this region call at night. Plan to be at your site no sooner than **30 minutes AFTER sunset**, and complete your site visits before midnight. Check weather websites for sunset times.

2.3 Weather Considerations: Although visits are based on date, weather remains an important factor. Frogs are unlikely to call if it is very windy or cold. If temperatures drops below 5°C or wind is above 3 on the Beaufort scale, please make note of this in your monitoring report. If possible, redo the survey when conditions improve (still within the 14th-21st day of the month). If you are redoing your visit on the same day, please allow at least 30 minutes between counts. Submit the data from **both** counts as separate monitoring forms.

Wind Speed: Frogs do not like to expose themselves to the drying effect of strong winds. Strong winds will also make it difficult to hear distant callers.

Precipitation: Damp nights of fog or light drizzle will produce very good frog calling conditions. Moderate to heavy rain makes it difficult to hear and will make note-taking quite frustrating.

Beaufort Wind Scale

	Wind Speed	Description
0	0 – 2 km/h	Calm; smoke rises vertically
1	3 – 5 km/h	Light air movement; smoke drifts
2	6 – 11 km/h	Slight breeze; wind felt on face
3	12 – 19 km/h	Gentle breeze; leaves in constant motion
4	20 – 30 km/h	Moderate breeze; dust raised, loose papers blown about; too windy for monitoring

PART 3: How to Monitor

3.1 Site Location: The location of your monitoring site will already be determined. You will be able to see a map of your site through the Landscape Mobile App. A Couchiching Conservancy staff member will go with you and your monitoring partner to show you where to go.

AUDITORY SURVEY

3.2 Settling Period: Approach your monitoring site quietly. After arriving at the site, get settled in (data sheets out, pencil at the ready, etc.). **Wait 2-5 minutes in silence** before monitoring to give frogs time to recover from the disturbance created by your arrival at the site. To continue limiting disturbance to the frogs, while monitoring limit noise, movement, and limit use of lights.

3.3 Audio Survey - Listening/Recording: Ideally, one person will listen and orate, while the other person records data. The recorder stands just behind listener while the listener will point out the direction and say species and calling code. Suggestion: sweep the arc in front of you, starting at left and swinging to right. Survey for **5 to 15 minutes in length**. Record start and finish times.

Verify calls: One volunteer should verify the species by comparing the calls to reference frog call audio. Always listen to recorded calls through headphones to prevent disturbing the nearby frogs.

Hearing loss: As with any survey that requires listening skills, a person with a degree of hearing loss may miss some species. The person with the best hearing should conduct the count (they will also have to know the calls of each species).

Calling Codes	
<u>Code 1</u>	Individuals (<u>per species</u>) can be heard; no <u>overlap</u> of multiple individuals calling.
<u>Code 2</u>	Some overlap of males calling but can be separated with some careful listening. Some simultaneous calling.
<u>Code 3</u>	Full chorus; calls continuous and overlapping

Recordings: Broadcast of recorded calls is NOT ALLOWED. You may record what you are hearing, as a way to check later if you are correctly identifying the species. Use headphones to listen to recorded calls while on site.

3.4 Audio Survey - Data recording: Use the printed field sheets to list and map species and location. A small flashlight or headlamp will prove useful. Transfer the values to your Landscape form in the field or when you get home.

Mapping: On the field sheet indicate within the semi-circle the location, number and calling code of each frog (or group of frogs) calling. This will help you to determine if a particular frog or group has already been tallied.

Tallying: After your 5-15 minute audio survey, it is time to tally the results. When summarizing calling code (CC), retain the highest calling code heard for each species. For tallying the number (#) for a species, simply count up however many individuals of that species were heard. If the calling code for a species was 3 (impossible to distinguish individuals) then put N/A for their count.

3.5 Audio Survey - Possible Issues

Interruptions: Occasionally a sudden sound (e.g. car door slamming; beaver tail-slap) will interrupt the frog chorus, sending them into silence. If you have almost completed your ‘sweep’ and feel that what you have recorded is a good record of the site, make a note that the listening duration was interrupted. If the disturbance comes before you can complete the ‘sweep’, scrap the data sheet and start again, after waiting at least 5 minutes before recording data.

Missed Species. It is possible that a species may be missed during the call monitoring visits. This may be due to you not being on site when frogs are calling (wood frogs can start and finish within 48 hours), or possibly that one species was ‘drowned out’ by another more vocal species. Do not “stay out all night” waiting and hoping for an additional species (remember, this survey has to be done the same way for years to come by a variety of participants).

VISUAL SURVEYS

After your auditory monitoring, do a visual survey. This will help us learn more about what species are present. If you observed a frog outside of your visual sweep area/time, then count it as an **incidental observation**.

3.6 Visual Surveys – Searching/Recording: One volunteer will *stealthily* search while the other records the tally of species observed. The searcher looks along the shoreline and up to 3 m onto shore. Do not go into or disturb the water. Have at least one volunteer hold a flashlight (200 m range) to illuminate the area you are searching. You may wish to take a picture (or Photopoint in Landscape) of any frogs that you encounter as this will be helpful for figuring out ID later.

Tallying: Keep a tally of each species observed. At the end of the visual survey, total the number of each species observed. Do not add this to the totals from the auditory survey.

3.7 Visual Surveys – Search effort: Search effort is measured by time and area. Record the start and end time of your search. The time spent searching will vary depending on the size of the wetland and its accessibility. A search may take **5-20 minutes**. You may use binoculars to scan a bank/shoreline that is unsafe to traverse. To measure the area searched, use a measuring tape or use the Landscape App (see below). To avoid re-mapping and make the data more comparable between years, monitor the **same area each time**.

Landscape Mobile 3 App: You can use it to map out the area searched by making a Photopoint to mark the beginning and end of your survey area. Using the Photopoints and recorded tracks, a Couchiching Conservancy staff member will then be able to map out and calculate the area.

OTHER OBSERVATION

3.8 Incidental Observation. Incidental frog observations (heard outside of your monitoring period, or outside of your 100-m semi-circle listening radius) and other species of interest should be marked in Landscape app or recorded on the back of your monitoring sheet. If you hear or observe a species at risk, it is important to get coordinates for their location so that we can share that observation with the Natural Heritage Information Centre. Audio recordings of western chorus frogs (a species at risk) are useful to help confirm the identification.

3.9 Additional Observations You may also hear woodcock performing their ‘peent’ calls, or owls setting territory (great horned, barred, screech). Coyote howling and fox yapping may also be encountered. Bats may be observed flying over wetlands. Mark the locations in the Landscape app or make note on the back of your field sheet.

PART 4: How to Submit Frog Monitoring Data

Option 1: With Landscape Mobile App: Use the Landscape Mobile 3 App to track your visit, record incidental observations, volunteer hours, and frog data. Use the printed monitoring forms to map and keep tallies of your observations and then submit the totals through the Landscape form. *See Landscape Manual for instructions.*

Option 2: With Landscape Online: In the field, use paper to record all of your observations. When you get home, go to the Landscape Website and fill out the monitoring form there. *See Landscape Manual for instructions.*

Option 3: Just Paper: Use paper monitoring form in the field. Please drop off each form at the Couchiching Conservancy office as soon as possible, rather than holding onto them until the end of the monitoring season.

MONITORING FORM

OFFICE: Data: _____ Photos: _____ Hours: _____ Issues Reported: _____

The Couchiching Conservancy **Frog Monitoring Program** FIELD SHEET

Nature Reserve: _____ Visit #: _____
 Station: _____ Year: _____ Month: _____ Day: _____

Listener: _____ Vol. Hours: _____
 Recorder/Assistant: _____ Vol. Hours: _____

Environmental Conditions: Air Temperature (°C): _____ Beaufort Wind Scale (see below): _____
 Precipitation: 0 (none) 1 (trace/fog) 2 (rain) 3 (snow) 4 (Other) _____
 Background Noise: 1 (slight) 2 (moderate) 3 (high) 4 (excessive)

AUDITORY SURVEY

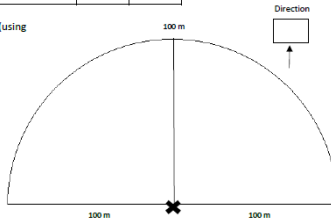
Start Time: _____ End Time: _____ (5 – 15 min duration)

		CC	#
AMTO	American Toad		
BULL	American Bullfrog		
CHFR	Western Chorus Frog		
GRTR	Gray Treefrog		
GRFR	Green Frog		
MIFR	Mink Frog		
NLFR	Northern Leopard Frog		
PIFR	Pickereel Frog		
SPPE	Spring Peeper		
WOFR	Wood Frog		

Calling Codes (CC)
 1: Calls are individual
 2: Calls overlap a bit
 3: Full chorus

We verified all frog call I.D.'s (using headphones) in the field:
 Yes _____ No _____

Beaufort Wind Scale	
0	Calm, no wind
1	Smoke drifts
2	Felt on face
3	Moves leaves
4	Raises dust



COUCHICHING CONSERVANCY Frog Monitoring Program The Couchiching Conservancy

VISUAL SURVEY

Start Time: _____ End Time: _____ (5 – 15 min duration)

Estimated Area Surveyed (m²): _____

	#
AMTO	American Toad
BULL	American Bullfrog
CHFR	Western Chorus Frog
GRTR	Gray Treefrog
GRFR	Green Frog
MIFR	Mink Frog
NLFR	Northern Leopard Frog
PIFR	Pickereel Frog
SPPE	Spring Peeper
WOFR	Wood Frog

INCIDENTAL OBSERVATIONS

Other observations such as birds, Species-at-Risk, reptiles, invasives, frogs outside of survey area/time

Species Name	Location	Count	How Saw/heard/tracks/scat	Media (photo/audio)

Please submit your data online through Landscape or return this sheet to the Couchiching Conservancy office at 1485 Division Road West, Orillia. Protocols for this program adapted from the Birds Canada Marsh Monitoring Program.