

INTRODUCTION

This survey method can only be used to detect presence of aquatic breeding frogs that sing to attract females. The method is primarily used to detect presence of a species, although crude measures of relative abundance have been defined. However, the method is very simple to use and can be used to survey large areas for the target species. Also, given that the timing and duration of frog breeding is very sensitive to weather conditions, this method can be used to track directional change and increased variation in weather patterns potentially caused by climate change.

OBJECTIVE

To detect the presence and persistence of some species of aquatic breeding frogs across the landscape. Eventually, over decades of monitoring, these data may be used as a biotic indicator of climate change effects.

METHODS

Where to survey: Shallow ponds with emergent vegetation and lakes with shallow vegetated margins are often good amphibian breeding sites. Although this method can be used to monitor breeding at one pond, it is often used to detect presence of frogs across the wider landscape. A back road that meanders across a landscape dotted with ponds and wetlands is potentially a good area to survey. Backyard ponds and school ponds are ideal locations because of logistical ease and hence the potential for long-term commitment to monitoring.

When to survey: The breeding season of amphibians varies depending on the location of the site in B.C. The optimum time and frequency of surveying should be discussed with the B.C. Frogwatch coordinator once the site is chosen. Surveys are usually conducted for 2 to 3 hours after sunset. The breeding time can vary from year to year even in the same location, and so multiple surveys (e.g., 3 times per year in the breeding season) provide better estimates of presence, detection rates, timing and duration of breeding, and persistence of populations.

How to survey: Call surveys can be conducted by approaching a breeding site to at least the minimum distance at which the call of the target species can be detected. Some species like the Western Toad have very feeble calls, while other such as the Pacific Chorus Frog have very loud calls. Wait a minute after approaching the listening station to minimize disturbance and to attune to hearing the calls. The duration of listening suggested by some protocols is 3 minutes, although it is often better to listen for 5 minutes to improve detection. If only one pond is being monitored, listening can be extended to longer periods to improve detection as long as the start and end times are clearly indicated in the data sheet. If there are factors that might reduce the probability of frog calling such as traffic, please make sure that this is noted in the comments. It is important that the area surveyed remains the same year after year, so that the data can be comparable across years. Estimate the area surveyed either using the GPS or measuring tape in the field, or from a high resolution map. The location of the survey site is indicated by the "Study area name" (the naming convention is explained in the data sheet). The entire survey area can be divided into small sub-divisions or smaller sampling units. These smaller sample units are sequentially numbered with a "Site Name" e.g., multiple small ponds along a rural road e.g., 2014_CallSurvey_LizardRoad_1, 2014_CallSurvey_LizardLake_2 and so on.

At the start of the project record project level information such as project leader name, study area name, site names and UTM's, and landscape information (First two pages of the printed data form and first two pages of the Excel data sheet).

At the start of each survey session/day fill out the information at the top of the second page of the data sheet such as date, start time, persons conducting the survey, and weather conditions.

Review the potential list of species that might be calling in the survey area and what their calls sound like using the BC Frogwatch website (<http://www.env.gov.bc.ca/wld/frogwatch/whoswho/calls/>). The best nights to survey are usually those following warm sunny days during the breeding season. A parabolic microphone can greatly improve the ability to detect faint and distant calls. Please make a note in the comments section if you are using a parabolic microphone. Playback surveys using the frog breeding call can potential increase detectability but needs specialized equipment.

Equipment List: GPS (and spare batteries / charged); Digital camera (and spare batteries / charged); BC Frogwatch call survey datasheet (below); Pencils; Clipboard; Watch; Thermometer.

Observer Information

Project Leader: (This information is entered on page 1 "Observer Info" on the Excel data sheet)

First Name _____ Last Name _____ Email _____

Other Observers (Excel sheet page 3 under "Surveyor" if data are collected by someone other than the project leader)

First Name _____ Last Name _____

Study Area Name _____

The naming convention is: Start Year_SurveyMethod_Site-Name_Region e.g., 2014_CallSurvey_LizardRoad_Okanagan

Habitat description: How would you classify the study Area? Circle one below and enter code in Excel data sheet

AF	AG	AS	BU	DC	FR	GR	RO	TR	UR
Aquatic - Flowing	Cultivated Agricultural	Aquatic - Still	Bush or Scrub land	Described in comments	Forest Related	Grassland	Rock/Exposed Soil	Transportation Transmission	Urban or Residential

Site Name – Use sequential numbering if listening at multiple ponds along a route. If not, just add "1" to the Study Area Name to fill in this column in the Excel Data form

Site Name (transect/ quadrat #)	UTM Zone	Easting (start or center)	Northing (start or center)	Surface Descrip. (codes below)	Bottom Descrip. (codes below)
<u>1</u>					
<u>2</u>					
<u>3</u>					
<u>4</u>					
<u>5</u>					
<u>6</u>					
<u>7</u>					
<u>8</u>					
<u>9</u>					
<u>10</u>					

Surface description

Described in comments	Open Water	Submergent vegetation	Emergent Vegetation	Floating Vegetation
DC	OW	SV	EV	FV
Provide sufficient detail	<i>No vegetation is visible within 1 metre below the surface.</i>	<i>Vegetation is visible within 1 metre of the surface, but does not break the surface of the water.</i>	<i>Vegetation breaks the surface of the water and is rooted in the bottom substrate.</i>	Vegetation is floating on the surface of the water and may or may not be rooted.

Bottom description

Described in Comments	Muddy	Sandy	Gravelly	Rocky	Detritus	Woody Debris
DC	M	S	G	R	D	WD
Provide sufficient detail	A mixture (inorganic particles between 0.062 and 2.00 mm diameter)	Sand (inorganic particles between 0.062 and 2.00 mm diameter),	Pebbles (pieces of rock between 2 and 70 mm diameter)	Mixture of rock pieces in which cobbles (pieces of rock between 70 and 250 mm diameter)	Pieces of organic material less than 150 mm long.	Pieces of trees, bushes and sticks greater than 150 mm long.

Evidence of Human activity in and within 100 metres of the site (circle below and type in code in Excel data sheet):

Not Evaluated	Little Evidence	Some Evidence	Moderate Evidence	Much Evidence
<i>NE</i>	<i>LE</i>	<i>SE</i>	<i>ME</i>	<i>MU</i>
Evidence not evaluated	For example, a back-country trail.	For example, a swimming hole, lake with boat access but no residential development.	For example, a large park within a developed area with many hikers but no motorized road access, lake with some houses but shoreline and surrounding dominant vegetative cover left undisturbed.	For example, lake with residential developments, docks and modified foreshore, vineyards, agricultural, cattle watering ponds, park surrounded by roads.

Land Use Within 100 m of the Site (circle dominant/majority habitat below and type in code in Excel data sheet):

<i>TR</i>	<i>AS</i>	<i>AF</i>	<i>AG</i>	<i>FR</i>	<i>RO</i>	<i>UR</i>	<i>BU</i>	<i>GR</i>	<i>DC</i>
Transportation/Transmission Corridor	Aquatic Still	Aquatic Flowing	Cultivated/Agricultural	Forest Related	Rock, Exposed soil	Urban or Residential	Bush/Scrub land	Grassland	Described in Comments

Biotic description (circle below and type in code in Excel data sheet):

Evidence of cattle activity at or with 100 m of site? (circle)	Not Evaluated	Yes	No
Evidence of beaver activity (aquatic habitats only)? (circle)	Not Evaluated	Yes	No
Native fish present (aquatic habitats only)? (circle)	Not Evaluated	Yes	No
Non-native fish present (aquatic habitats only)? (circle)	Not Evaluated	Yes	No

Survey Details (Type in code in Excel data sheet):

Code	Call	Egg Mass	Road Transect	Visual Transect	Visual Quadrat
Survey method	Call Surveys	Egg Mass Surveys	Road Transect Surveys	Visual Transect Surveys	Visual Quadrat Surveys

If you are surveying along a route, enter information in these two (green) columns

Transect length _____metres Initial bearing at start point _____° (1-360) (pointing towards end point)

If you are searching a square area or pond or a lake or wetland enter information in this (blue) column

Size of area is _____ square metres



CALL SURVEY PROTOCOL AND DATA FORM
FIELDS IN RED ARE MANDATORY FOR DATA ENTRY



Date _____ Start Time _____ End Time _____ Project leader/Surveyors _____

Cloud Cover

Clear	Cloud cover <50%	Cloud cover >50%	100 % Unbroken clouds
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Wind Speed

None	Leaves move slightly	leaves rustle but not twigs	leaves and twigs move constantly	small branches move, dust rises	small trees sway	large branches move, wind whistling
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Air Temp (°C) _____

Water Temp (°C) _____

Preceding 24hr Rainfall (mm) _____

Current Precipitation: _____

Use a thermometer to measure temperature. Use rain gauge or data from the local weather station to record rainfall. If you are guessing/estimating either temperature or rainfall, please indicate it in the comments.

None	Foggy	Misty Drizzle	Drizzle	Light Rain	Hard Rain	Snow
	<i>Reduced visibility, like a cloud</i>	<i>No distinct rain drops but can dampen clothing</i>	<i>Fine rain drops (<0.5mm diameter), visible on ground</i>	<i>Puddles not forming quickly, <2.5 mm rain per hour</i>	<i>Puddles form quickly, >2.5 mm rain per hour</i>	

Site Name	UTM Zone	Easting	Northing	Species ID	Call code	Background Noise code	Other life stages ¹	Comments

¹

FC	IN	NO	OV
Full chorus	Individual	Nothing	Overlapping
individual calls cannot be distinguished	Individual calls are not overlapping	No calls were heard	Some individuals can be distinguished, but some calls are overlapping

²

CLN	Q	SGN	SN
Constant Loud Noise	Quiet	Significant Noise	Some Noise
Constant loud noise that will reduce the detectability of species, e.g. Heavy traffic or roaring creek	No discernable background noise.	Significant noise that may have reduced the detectability of species, e.g. Traffic	Some noise but not interfering, e.g. Occasional sounds in the distance, dogs or coyotes barking in the distance

Other Comments about the Site and the observation

Data must be transferred to the Excel data form: Egg Mass Monitoring Excel Template

Download form from: <http://www.env.gov.bc.ca/wld/frogwatch/frogwatching/call-surveys.htm>

Scanned data forms and Excel files can be emailed to: bcfrogwatch@victoria1.gov.bc.ca

Paper forms may be mailed to: B.C. Frogwatch, Ecosystems Branch, Ministry of Environment,

PO Box 9338 Stn Prov Govt Victoria, B.C. V8W 9M1