

**INTRODUCTION**

This survey method is only for aquatic breeding amphibians. Amphibian populations are known to fluctuate naturally from year to year. One way of estimating the relative abundance of a population is to count the number of egg masses at a site each year. The expectation is that if sufficient data is collected over time, trends in population size can be detected over the noise of annual fluctuation in numbers.

**OBJECTIVE**

To assess the diversity and number of amphibians breeding at a given site, and to identify important breeding sites for protection and conservation.

**METHODS**

Where to survey: Shallow ponds with emergent vegetation and lakes with shallow vegetated margins are often good amphibian breeding sites. However, any pond or lake or wetland would be suitable because null and low numbers of egg mass data is just as important for understanding amphibian breeding habitat selection. 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. The breeding time can vary from year to year even in the same location, and so multiple counts (e.g., 3 times per year in the breeding season) provide better estimates of eggs laid.

How to survey: Egg mass surveys can be conducted by walking along the shoreline or from a canoe/kayak/stand-up paddle board. It is important that the surveyor be able to see through the water and detect egg masses. The area surveyed can be the whole pond, when the ponds are shallow and small or small shallow segments of a larger lake or wetland. It is important that the area surveyed remains the same year after year, so that the data can be comparable across years. The survey area can either be a transect (a line along the shore line) or a quadrat (the whole pond or a two dimensional area like a bay in a lake). Mark the borders of the survey area with permanent markers (tags on posts, posts in the water, significant landmarks etc.), and record the UTM's using a GPS unit. 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 subdivisions or smaller sampling units. These smaller sample units are sequentially numbered with a "Site Name" e.g., multiple small shoreline segments within a larger wetland could be 2014\_eggmass\_LizardLake\_1, 2014\_eggmass\_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.

Identifying amphibian egg masses requires training and experience, and only certain species with easily detectable egg masses can be surveyed using this method. Most amphibian egg masses are laid in the littoral zone, from the shore to the edge of submergent and emergent vegetation usually at a depth no greater than 0.5 metres. Searches can be from a boat or from shore depending on the site. Avoid walking in the shallow water where the egg masses are laid to minimize disturbance. Usually, searchers are able to visually survey a 4 meter wide transect, 2 meters on either side. Searches are best done on calm sunny days, and the use of polarized sunglasses reduces surface glare and increases detectability. When there are only a few egg masses, UTM's of each egg mass can be recorded. When there are many egg masses, it would be best to provide total counts in each sub-section as divided by the Site Names. The Site Name UTM's can be used for each of these total counts.

Remember to use the BC Ministry of Environment disinfection protocol if surveying multiple wetlands (<http://www.env.gov.bc.ca/wld/documents/wldhealth/BC%20Protocol%20-%20Amphibian%20field%20researchers%202008.pdf>).

Equipment List: GPS (and spare batteries / charged); Digital camera (and spare batteries / charged); BC Frogwatch egg mass survey datasheet (below); Pencils; Clipboard; Watch; Thermometer; polarized sunglasses; life jacket if surveying from a boat; Amphibian field guides with egg mass identification tips.

**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\_LocationName\_Region e.g., 2014\_EggMass\_LizardLake\_Okanagan

**SITE NAME** – Use sequential numbering if subsampling a larger wetland or subdividing the shoreline. 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	No vegetation is visible within 1 metre below the surface.	Vegetation is visible within 1 metre of the surface, but does not break the surface of the water.	Vegetation breaks the surface of the water and is rooted in the bottom substrate.	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	<b>Egg Mass</b>	Road Transect	Visual Transect	Visual Quadrat
Survey method	Call Surveys	<b>Egg Mass Surveys</b>	Road Transect Surveys	Visual Transect Surveys	Visual Quadrat Surveys

If you are using a line along a shoreline or pond perimeter enter the length and bearing information. This information should be transferred to the two green columns in the Excel datasheet

**Transect length** \_\_\_\_\_ **metres** Initial bearing at start point \_\_\_\_\_° (1-360) (pointing towards end point)

OR

If you are searching a square area within a pond or a lake or wetland enter the area information. This information should be transferred to the blue column in the Excel datasheet.

**Size of area is** \_\_\_\_\_ **square metres**



**EGG MASS 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: \_\_\_\_\_

Water turbidity: \_\_\_\_\_ (Enter the depth to which you can clearly see if there is an egg or egg mass)

*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 (&lt;0.5mm diameter), visible on ground</i>	<i>Puddles not forming quickly, &lt;2.5 mm rain per hour</i>	<i>Puddles form quickly, &gt;2.5 mm rain per hour</i>	

UTM Zone	Easting	Northing	Species ID	Total Count	Egg mass	Eggs	Other life stages <sup>1</sup>	Comments

<sup>1</sup> Life-stage/Sex: Adult Males, Adult Females, Adult Unknown Sex, Juvenile Unknown Sex, Unknown Age and Sex. In the Excel data sheet enter the number of tadpoles and Unknown age and sex in the columns. All other life stages in Comments

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/visual-surveys.htm>  
 Scanned data forms and Excel files can be emailed to: [bcfrogwatch@victoria1.gov.bc.ca](mailto: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