

INTRODUCTION

Amphibians and reptiles can move kilometers across the landscape as they migrate between their seasonal habitats, from overwintering hibernation sites, to breeding sites to foraging sites. As road density increases in British Columbia, more and more wildlife populations are experiencing increased road mortality. Amphibians and reptiles are especially susceptible because the dark, hot surfaces of roads act as attractive basking habitats, an attraction that is often fatal.

OBJECTIVE

To estimate the number of amphibians and reptiles that are being killed on roads in British Columbia, and to identify “hot spots” where high levels of road mortality could be leading to population declines.

METHODS

Where to survey: Ideal locations are paved roads next to wetlands (for amphibians and turtles) or talus slopes and rock outcrops (for reptiles). Locations where people have noticed dead or live animals on the road could indicate “hot spots” of road mortality.

When to survey: Many amphibians move during rainy warm nights especially in the spring and fall. Turtles move mainly during the breeding season in late spring or early summer, and hatchling turtles make their way back to the ponds in early spring. Reptiles move in spring away from hibernation sites, and back to these sites in the fall. However, surveys throughout the active season will provide a complete seasonal profile of movement and mortality patterns.

How to survey: Mark the start point and end points of your road transect with permanent markers, and record the UTM using your GPS unit. It is very important that exactly the same section of road is surveyed every time. This is your sampling transect and is indicated by “Study Area Name”. The length of road surveyed can vary depending on the time, ability of volunteers to walk the distance and terrain but once determined, remains unchanged over the 3 to 5 years of monitoring. Longer driving surveys are possible, and may be discussed with the B.C. Frogwatch coordinator.

No matter what the length, the road transect can be divided into 20 to 100 meter segments and numbered sequentially. The UTM at the start of each segment should be recorded. Each transect segment represents a sample station indicated by the “Site Name”.

At the start of the project record project level information such as project leader name, study area name, site names and start UTMs, and landscape information (First page of the printed data form and first two pages of the Excel data sheet). At the start of each survey session/day/night, 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. Also, use a hand held clicker [tally counter](#) to count the number of cars that pass between the start and end of the survey. Enter this information under “Total number of cars” at the bottom of page 2 of the data sheet. To detect and record information on the animals observed, slowly walk along the side of the road, looking for animals on the road or shoulder. Work in groups of two or three - one person watches for cars, while one or two people look for animals. When you spot an animal, stop, look to see if it’s safe, then enter the road and move the animal to the side of the road. If possible, gently coax the animal to move off the road in the direction it was travelling. If this is not possible and/or traffic volume is so high that it is imperative to move the animal to safety quickly, you may have to hand capture the animal to move it away from the road. Please discuss with the BC Frogwatch coordinator safe methods of handling animals (e.g., spray your clean hands with water to hand capture the live amphibians, firmly holding a turtle by the back of the shell). Use a trowel or tweezers to remove dead animals to the side of the road for closer examination and species identification. Once back on the side of the road, record all the information about the animal/animals in the data sheet. Release live animals well off the road in the direction they were moving. Move dead animals to the side of the road to prevent double counting and to prevent scavengers from also being killed on the road.

Equipment List: High visibility safety vest for each person; GPS (and spare batteries / charged); Digital camera (and spare batteries / charged); BC Frogwatch road survey datasheet; Pencils; Clipboard; Bucket with lid; Small spray bottle containing stream, lake or pond water (not tap water); Tweezers; Hand trowel; Watch; Thermometer; Bright flashlights and headlamps (and spare batteries) if working after dark

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

First Name _____ Last Name _____

Study Area Name _____

The naming convention is: Start Year_target-taxa_Road-Name_Region e.g., 2014_amphibians_FrogLane_Okanagan

Site Name – The entire transect can be divided into 20-100m segments which are numbered sequentially

Site Name (transect segment #)	UTM Zone	Easting (start of transect segment)	Northing (start of transect segment)	Human Activity (codes below)	Land Use (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>					

Evidence of Human activity in and within 100 metres of the site (circle):

Not Evaluated	Little Evidence	Some Evidence	Moderate Evidence	Much Evidence
NE	LE	SE	ME	MU
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

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

SURVEY DETAILS

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



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



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

Remember to count the number of cars passing by during the survey period. Use a hand held clicker counter.

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) _____

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 segment #	UTM Zone	Easting	Northing	Species ID	Total Count	Lifestage/sex ¹	Behaviour ²	Sign ³ type	Comments

¹ Life-stage/Sex: Adult Males, Adult Females, Adult Unknown Sex, Juvenile Unknown Sex, Unknown Age and Sex
² Basking, Drinking, Feeding, Fleeing, Hunting, Living (Activity that could not be classified), Migrating Daily, Migrating Seasonally, Traveling or Described in Comments,
³ Body parts, Carcass, Snake Pellet, Shed Skin, or Described in Comments,

Total number of passing cars during survey period: _____

Other Comments about the Site and the observation

Remember to record the end time in the first line above

Date must be transferred to the Excel data form: Road Transect Monitoring
 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
 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