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# REPTILES AND AMPHIBIANS

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## THE RANA (RESEARCHING AMPHIBIAN NUMBERS IN ALBERTA) PROJECT

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### Introduction

Declines in amphibian populations are occurring around the world, but some regions, and some species are experiencing more dramatic declines than others. There is no clear pattern yet as to which species are subject to declines and which are not. A great deal more work needs to be done in order to fill gaps in our knowledge in respect to the geography of amphibians, and where declines are occurring. Little information is available on population fluctuations and/or distributional changes for many species of amphibians (Pechmann and Wilbur 1994).<sup>3</sup>

In Alberta, little work had been conducted on amphibians, and no long-term standardized data have been collected. The RANA (Researching Amphibian Numbers in Alberta) project began in 1997. This monitoring program combines intensive monitoring with public education.

The objectives of the program for 1998-99 were:

To institute intensive, standardized monitoring programs at five representative breeding sites in the province of Alberta.

To use these sites as tools to educate the public about the amphibians of Alberta and how studies are conducted.

### Methods

#### Study Sites

Five sites were surveyed in 1998: Beaverhill Lake, Cypress Hills, Kananaskis, Lesser Slave Lake, and Meanook (Figure 1, Table 1). Beaverhill, Lesser Slave, and Meanook had been surveyed in the summer of 1997. Sites were chosen based on three criteria: 1) must be representative of an ecoregion and encompass a variety of breeding amphibian species, 2) must be close to a park or protected area where the public visit, and 3) must be amenable to having pitfall traps placed around the site.

**Table 1: Latitude, Longitude, and Ecoregion of the five study sites in 1998.**

Study Site	Ecoregion	Latitude	Longitude	Pond Circumference
Beaverhill Lake	Aspen Parkland	53.38°	112.53°	9 – 10 m arrays
Cypress Hills	Montane/Prairie	49.66°	110.06°	140 m
Kananaskis	Montane	50.95°	115.14°	90 m
Lesser Slave Lake	Boreal Forest	55.35°	114.74°	250 m
Meanook	Boreal Forest	54.62°	113.35°	240 m

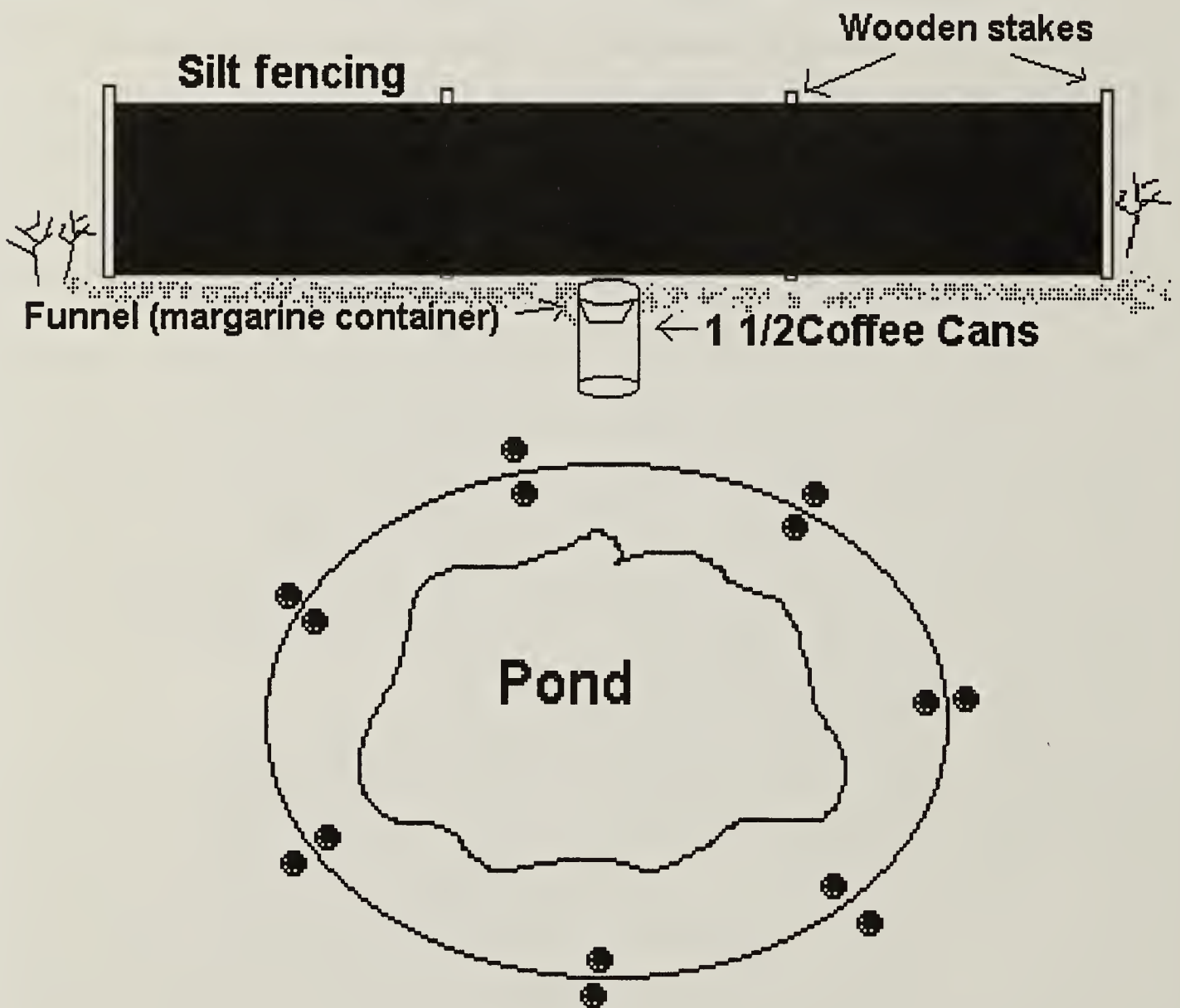
**Figure 1: Map of 1998 RANA site locations in Alberta.**



Drift fences are commonly used to inventory amphibian communities.<sup>2</sup> A variety of fence materials have been used including plastic, aluminum, galvanized hardware cloth or silt fencing.<sup>1</sup> Each new monitoring pond site was surrounded by a silt fencing and pitfall traps (1 ½ coffee cans deep) to allow capture of animals moving toward or away from the site. Beaverhill had the plastic fencing

replaced with silt fencing, as it was heavily damaged by coyotes and beavers, while Lesser Slave and Meanook simply had the plastic fencing repaired. Fencing completely surrounded each pond, and pairs of pitfall traps were placed every 10 m along each side of this fence (Figure 2). At Beaverhill nine arrays of fencing (10 m each) were set in three habitat types along a small lake.

**Figure 2: Diagram showing fencing and pitfall trap set-up.**



Beaverhill, Lesser Slave, and Kananaskis were surveyed for three consecutive weeks in the spring, intermittently in the summer, and three consecutive weeks later in July and August. Cypress Hills and Meanook were only surveyed in July and August. When sites were not in operation, plastic tops were placed on top of the

coffee cans and the fencing was opened up to allow amphibians to move freely to and from the pond.

### Results

In 1998, over 1 200 amphibians were captured at the five sites, representing eight species:



Long-toed Salamander (*Ambystoma macrodactylum*)  
 Columbia Spotted Frog (*Rana luteiventris*)  
 Tiger Salamander (*Ambystoma tigrinum*)  
 Northern Leopard Frog (*Rana pipiens*)  
 Boreal Chorus Frog (*Pseudacris maculata*)  
 Boreal Toad (*Bufo boreas*)  
 Wood Frog (*Rana sylvatica*)  
 Canadian Toad (*Bufo hemiophrys*)

Wood frogs and boreal chorus frogs were the most common species while the Canadian toad was the least common amphibian captured (Table 2). Captures varied in different ecoregions. Wood frogs were caught at every site but Cypress Hills. Spotted frogs and long-toed salamanders were only captured at Kananaskis. No great plains

toads or plains spadefoots were caught at any of the sites. More tiger salamanders were captured at Beaverhill in 1997 than in 1998. Boreal toad captures at Meanook and Lesser Slave Lake were much higher in 1998, while wood frog captures dropped at Meanook (Table 3).

**Table 2: Numbers of each species captured at RANA sites in 1998.**

Study Site	LTSA	TISA	BCFR	WOFR	CSFR	NLFR	BOTO	CATO	TOTAL
Beaverhill Lake	0	1	17	182	0	0	0	0	200
Cypress Hills	0	31	2	0	0	5	0	0	38
Kananaskis	186	0	0	61	7	0	33	0	287
Lesser Slave Lake	0	0	5	33	0	0	23	1	62
Meanook	0	0	4	277	0	0	343	0	624
<b>TOTAL</b>	<b>186</b>	<b>32</b>	<b>28</b>	<b>553</b>	<b>7</b>	<b>5</b>	<b>399</b>	<b>1</b>	<b>1 211</b>

**Table 3: Numbers of each species captured at RANA sites in 1997.**

Study Site	TISA	BCFR	WOFR	BOTO	CATO	TOTAL
Beaverhill Lake	21	0	0	0	0	21
Lesser Slave Lake	0	10	73	7	0	90
Meanook	0	4	193	3	0	200
<b>TOTAL</b>	<b>21</b>	<b>14</b>	<b>266</b>	<b>10</b>	<b>0</b>	<b>311</b>

### Public Education

1265 people visited RANA sites in 1998 (Table 4), compared to 386 in

1997. Lesser Slave Lake, Beaverhill, and Meanook more than doubled the number of people visiting the sites.

**Table 4: Number of visitors to each RANA site**

Location	Number of People	
	1997	1998
Beaverhill Lake	50	125
Cypress Hills	-	150
Kananaskis	-	359
Lesser Slave Lake	326	611
Meanook	10	20
<b>TOTAL</b>	<b>386</b>	<b>1 265</b>

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