

## **Alberta Conservation Association 2017/18 Project Summary Report**

**Project Name:** Provincial Snake Hibernaculum Survey

**Wildlife Program Manager:** Doug Manzer

**Project Leader:** Kris Kendell

**Primary ACA staff on project:** Mike Jokinen, Kris Kendell, Doug Manzer, Sue Peters, Amanda Rezansoff, and Mike Verhage

### **Partnerships**

Alberta Environment and Parks

### **Key Findings**

- We worked with Alberta Environment and Parks to develop a new protocol for the survey of snake hibernacula in Alberta.
- We surveyed a total of five snake hibernacula during the spring and autumn to test the performance of the newly developed protocol. We verified snake occupancy of four of the five hibernacula surveyed.
- We are collaborating with the Alberta Environment and Parks to identify the best methods for preventing the inadvertent transmission of pathogens while working between snake hibernacula.

### **Introduction**

Snakes are at the geographic edge of their North American range within Alberta, with most species having a small range of occurrence in the province. This makes them highly susceptible to a variety of environmental drivers and adverse human activities. Obtaining reliable information on the location and status of snake hibernacula in the province is an important step to minimize snake mortality and loss of key habitats. Additionally, determining snake occupancy at hibernacula can help inform land-use planning and best management guidelines established by the Government of Alberta.

In partnership with Alberta Environment and Parks (AEP), we developed and trialed a new protocol that describes preferred methods for surveying snake hibernacula in Alberta. The main objective of the protocol is to determine snake occupancy of hibernacula recorded in the Fish and Wildlife Management Information System (FWMIS) database. The protocol also emphasizes assessment of habitat, identification of threats to hibernacula, and appropriate biosecurity measures while working between hibernacula. Surveyors are also directed to collect snake tissue from dead-on-road specimens, or from shed snake skins, following guidelines outlined in the Herpetofauna of Alberta BioBank initiative (Eaton et al. in prep.). These tissues can later be used for disease research and other applications, not directly related to the project. Finally, surveyors

are encouraged to have a dialogue with landholders about key habitat needs and resources important for snakes and the conservation of hibernacula over the long-term.

## **Methods**

In preparation for snake hibernaculum surveys, we ensured that any required permits and permissions were obtained prior to conducting work in Provincial Parks or on private land. We reviewed the FWMIS database to provide information about the occurrence of snake hibernaculum records in Alberta from which we selected five sites, with varying coordinate accuracy and precision, to trial the protocol.

Surveys were completed upon spring emergence of snakes from hibernacula, prior to snake dispersal to summer home ranges (April 1 to May 31) and during autumn prior to ingress of snakes into hibernacula for the winter (September 1 to October 15).

We searched for evidence of snake presence in habitat features associated with the target hibernacula. The amount of area searched depended on habitat accessibility, as well as the accuracy and precision of the coordinate location in FWMIS. Survey times ranged from no longer than two-person-hours for GPS points to up to four-person-hours within a specified area (e.g., quarter section). We recorded a start and end time for each survey as a general measure of survey effort.

To avoid inadvertent transmission of pathogens while working between snake hibernacula, we wore disposable coveralls, kept equipment and clothing from coming into contact with the ground and followed established procedures for disinfection of potentially contaminated gaiters and footwear. Coveralls were carefully removed and stored for disposal before leaving the hibernaculum site.

While working in fragile environments, every attempt was made to keep damage from searching to a minimum. Whenever possible, hibernacula were viewed from a distance so as not to disrupt snake behaviours, degrade habitat, or attract predators to the site.

## Results

We surveyed five hibernacula during the spring (May 2 and May 3) and autumn (September 19 and September 20). Of hibernacula surveyed, four were verified to be occupied by snakes (Table 1).

Table 1. Approximate count of each snake species observed at each hibernaculum visited in 2017/18.

Site	Landholder	Date Visited	Approximate count of snake species observed		
			Plains Garter	Wandering Garter	Red-sided Garter
1	Government of Alberta	May 2	1-20	0	0
2	Private	May 3	0	0	1,000+
3	ACA Conservation Site	September 19	0	0	0
4	ACA Conservation Site	September 19	1-20	1-20	0
5	Private	September 20	1-20	1-20	0

We determined that the survey protocol and associated field data form performed well during trial surveys, with only minor refinements necessary. We are continuing to collaborate with AEP to further refine the biosecurity elements of the survey protocol to ensure they comply with all provincial biosecurity regulations, as they become available.

## **Conclusions**

ACA has long been a centre for snake conservation through encouraging public participation in reptile citizen science and offering educational materials about reptiles. In 2017/18, in consultation with AEP, we developed a survey protocol that will help support a provincial snake hibernaculum survey over at least the next two years. Obtaining reliable information on the location and occupancy of snake hibernacula in the province will be an important step to minimize snake mortality and destruction of these important habitats. Additionally, determining snake occupancy at hibernacula can help inform land-use planning and best management guidelines established by the Government of Alberta.

## **Communications**

### *Oral presentations*

- Alberta Amphibian and Reptile Specialist Group; Kris Kendell; Red Deer, AB; March 6, 2018.

## **Literature Cited**

Eaton B, Kendell K, Kriston I, Russell A, Steinhilber M. In Prep. Draft Herpetofauna of Alberta BioBank: Guidelines for Reptile and Amphibian Tissue Collection. The Provincial Museum of Alberta, Edmonton, Alberta, Canada. 22 pp.

## Photos



On a warm spring day, masses of red-sided garter snakes congregate outside the entrance of their hibernaculum, welcoming ACA wildlife biologists as they trial a new protocol for the survey of snake hibernacula in Alberta. Photo: Kris Kendell



ACA Wildlife Biologists, Mike Jokinen (foreground) and Mike Verhage (background) wear disposal pant coverings as a biosecurity measure while investigating a snake hibernacula on an ACA conservation site. Photo: Kris Kendell