

# Friends of Cooking Lake-Blackfoot: Snake Activity Project

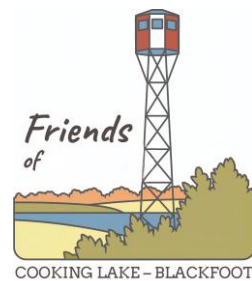
## *Road-kill Survey 2025*



*March 2026*

***Friends of Cooking Lake-Blackfoot***

**52365 Range Road 210  
c/o Cooking Lake - Blackfoot Provincial Recreation Area  
Sherwood Park AB T8G 1A6**



## Executive Summary

Ongoing citizen science activities of the Friends of Cooking Lake-Blackfoot (FCLB, formerly Friends of Blackfoot Society [FoB]) include a snake monitoring project that emphasizes spring and fall observations of plains garter snake (*Thamnophis radix*) in the vicinity of multiple hibernacula in a small portion of Cooking Lake moraine. In 2023, the program expanded to include a tally of garter snake mortality on roads adjacent to Waskehegan Staging Area of the Cooking Lake-Blackfoot Provincial Recreation Area (PRA), primarily 7 km along Range Road (RR) 210 south of Baseline Road. This project continued through 2024 and 2025. Annual reports are available from FCLB.

In 2025, standardized surveys began on portions of Twp Rd 530, RR 210, and TR 524 began on April 6 and continued through to October 27 when repeated road surveys in late October did not detect any dead or live snakes. A cumulative total of 303 snakes was recorded (299 dead, 4 live). Of these snakes, 231 (77%) dead snakes were seen on the Range Road 210 portion of the surveys.

Temporal distribution of mortality was bimodal: condensed focal spring mortality was detected in late April and very early May. Local weather data correlated with spring snake activity, as reflected in mortality which occurred when daytime temperatures were above 20C. The fall mortality began in mid August and was prolonged through to mid October. Mortality in October aligned with spikes in daytime temperatures approaching 20C. No mortality was detected after daytime temperatures fell below 15C.

These observations are consistent with the period when garter snakes migrate from hibernacula to their summer use areas in spring and then move back towards their winter den sites in the fall. Spatial distribution indicates mortality is not equally distributed along the surveyed area but is clustered around three local sites in the vicinity of nearby hibernacula. Mortality in 2025 also was apparent on other portions of RR 210 adjacent to standing waterbodies. Summer 2025 was particularly dry and as standing waters disappeared through summer, snake mortality occurred along much of the 7km length of RR 210.

Cumulative snake mortality data collected 2023-2025 is summarized. Consistent temporal, geographic, and demographic patterns are readily apparent. Spring mortality period is relatively short and focal, suggesting snakes fresh from their winter dens are driven to travel directly to preferred summer areas. They are not spending time in the vicinity of the den. In contrast fall mortality is drawn out over 4-6 weeks as snakes move towards den sites but delay hibernation as long as local weather supports activity of cold-blooded reptiles.

Risk to garter snake populations is focused adjacent to den sites, spread across both genders and all sizes/ages, and is significantly higher in fall than in spring. Each year, fall mortality accounts for 80% of the annual mortality. Excessive mortality on the surveyed section of RR 210 reflects increased human activity on this busy paved country road.

FCLB continues to build on this project as an opportunity to provide snake-friendly information to public audiences and data to inform future collaborative mitigation to reduce the excessive road-related mortality of garter snakes throughout the Cooking Lake moraine.

## Background

Plains garter snakes (*Thamnophis radix*) are relatively common in east central Alberta south of Cold Lake (Russell and Bauer 2000). Their preferred habitats contain ponds, lakes, sloughs or marshes in aspen parkland and short-grass prairie natural regions. These areas provide an abundance of preferred foods, including amphibians, small mammals, worms, invertebrates, and even small fishes. Garter snakes use hibernation as a critical overwinter survival strategy and thus require suitable winter den sites in rock

piles, sink holes, mammal burrows, or among tree roots. Garter snakes also will hibernate under buildings or in cellars when suitable conditions are present to sustain their period of dormancy. Extensive migration can occur between winter and summer use areas.

All key factors for garter snake survival are abundant on the Cooking Lake Moraine and throughout the Beaver Hills Biosphere. These snakes are adapted naturally to maintain successful populations on the moraine and are an essential component of local ecosystems. In particular, the rock rubble base of the moraine (glacial till) provides abundant winter den sites for hibernating snakes (Kendell 2020). An active plains garter snake hibernaculum (at least two separate den sites) at the Waskehegan Staging Area of the Cooking Lake-Blackfoot Provincial Recreation Area (PRA) east of Ardrossan, Alberta was registered with provincial Parks, and Fish and Wildlife, databases in 2020 (Pybus 2020). Further south on Range Rd (RR) 210, garter snakes are known to hibernate in rock piles on private land adjacent to RR 210. Additional verbal reports suggest other hibernacula are present throughout the general area.

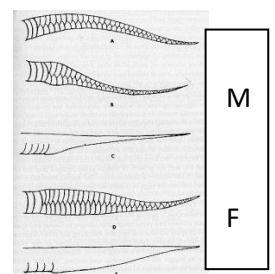
As an add-on to ongoing local citizen science interest in snakes, a concerted effort began in 2023 to document vehicle-related garter snake mortality along RR 210 along the west boundary of the PRA and Elk Island National Park (EINP) between Highway 16 and Wye Road (Hwy 630). Based on the lack of snake mortality in results from 2023, the survey route was truncated to exclude RR 210 north of Baseline Rd (Township Road [TR] 530) and south of Voyageur Estates (survey distance retained: 7km along RR 210). To date, FCLB documented snake mortality on this transect each year 2023-2025. All reports are available from FCLB by contacting [info@friendsofclb.org](mailto:info@friendsofclb.org) or at [Friends of Blackfoot Society](#).

Snake mortality on the surveyed portion of RR 210 was known locally for many years, most often in spring and fall (approx. Apr/May, Aug/Sept). Dr Gordon Court (wildlife biologist, Fish and Wildlife) spent many hours in this area in his early years (1960s, 70s, 80s). The snakes he saw were largely red-sided garter snakes (*Thamnophis sirtalis parietalis*). Currently, snakes seen in this area are exclusively plains garter snakes (*Thamnophis radix*). However, this report provides this information as background and will not delve into reasons for this change in biodiversity.

## Methods

**Road Kill Efforts:** Standardized surveys to document dead or live garter snakes were conducted by one observer throughout the summer. Total distance covered each survey was ~11 km. (7 of which were on RR 210, 2k each on TR 530 and 524) and generally took 60-90 min. The route was east on Baseline Road (Twp 530) from RR 211 to RR 210, south on RR 210 to Voyageur Estates southern entrance, deadhead north on RR 210 to TR 524, then west on 524 from RR 210 to 211 (occasionally west of 211 approximately 0.5 km). Surveys were conducted from a slow-moving vehicle (10-20 km/hr) in late afternoon/early evening during daylight. Rarely in September, due to the sheer number of dead snakes and waning daylight, the survey route was completed the following day.

All live or dead snakes were counted and recorded with GPS location. General observation of estimated size category (v small ~15 cm, small 15-25 cm, medium 26-50 cm, large 51-70 cm, v lge >70 cm) and, when apparent with dead snakes, gender based on reproductive conformation (male - expanded cloacal profile or direct evidence of extruded hemipenes; female – tapered cloacal region with straight-line profile & thicker tail) were recorded when apparent. Occasionally dead snakes and associated habitat pictures were taken. All observations were recorded on a paper map and also uploaded in real-time to the Alberta provincial road mortality app (511 Alberta Highway Watch, Govt of AB). Topographic descriptors were used to identify specific portions of the route to help assess potential foci of mortality. All dead snakes were disposed in the adjacent roadside ditch.



Care and attention was taken at all times in regards to traffic safety and attention to oncoming or passing vehicles. This included use of 4-way flashing lights throughout the survey, avoidance of stopping on hills, vehicle displaced well over to right shoulder for any stops, and avoidance of busy times of day in terms of traffic use on RR 210 (i.e. avoid commuter times, generally conducted late afternoon/early evening).

Local education efforts to highlight and perhaps reduce garter snake mortality included posting notices near community mailboxes and community halls, information disseminated via local social media contacts, posters at trailheads in the PRA, and selected agency social media postings. In addition, in spring and fall the County of Strathcona placed two large flashing traffic signs [Watch for... Garter



Snakes] on RR 210, one at the intersection with TR 530 and one just north of Wye Road. These were active 24 hrs/day. The County also placed small sandwich signs near local community mailboxes during the same time periods. In 2024, the County installed permanent collapsible road signs that can be opened to display an image indicating snake activity in the area. These are opened during spring and fall migration periods. In addition, beginning in 2024 during spring and fall migration, Alberta Parks deploys sandwich boards on the Waskehegan entrance road that provide awareness of the local garter snakes to visitors entering and leaving the site.



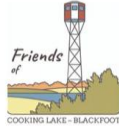
## ***Results***

### ***Surveys - General***

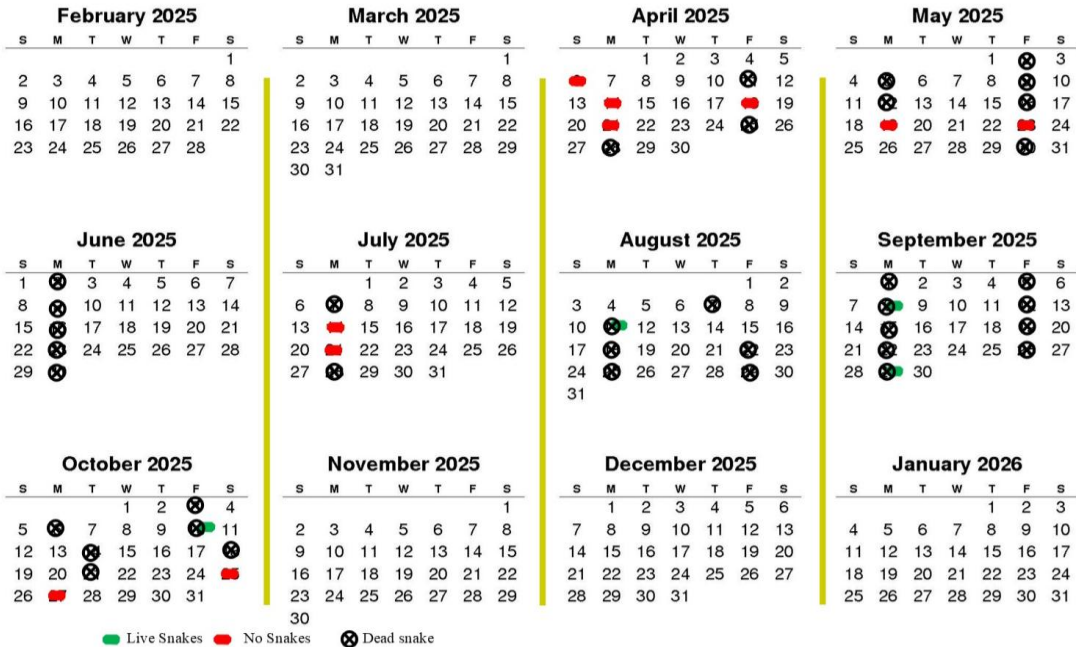
Snake surveys began on April 6 2025 (Figure 1a,b). Subsequent early surveys were twice a week through April and May. Surveys in June and /July were weekly on Mondays. From late August to late October, surveys were conducted bi-weekly, generally on Fridays (prior to a weekend) and Mondays (after a weekend). Surveys were discontinued in the fall following multiple surveys in which no dead or live snakes were seen, in conjunction with weather conditions consistent with known reduction in snake activity.

A total of 299 dead and 4 live snakes was tallied. Limited mortality was detected on TR 530 (n=59, 20%) or TR 524 (9, 3%) and the great majority occurred on RR 210 (231, 77%). The temporal pattern of mortality on each road was similar, other than on Apr 11 when 1 dead snake was found on TR 530 but no mortality was detected on RR 210 (similar situation in 2024 at same location). Data presented hereafter focus on RR 210.

Figure 1a,b. Snake observation surveys, all roads, April to October 2025. 1a- icons, 1b – numerical (# dead snakes)



### Snake observations (530+210+524) 2025 Start date: April 6



**Range Road 210**

A total of 234 snakes (231 dead, 3 live) was seen on 47 surveys along RR 210 between Baseline and Voyager 1 between April 6 and October 27 2025 (Table 1, Fig 2, 3, 4). Dead snakes were seen on 32 of the 47 surveys, live snakes were seen on 3. No snakes dead or alive were seen on 15 surveys, primarily in April and October.

Figure 2. Dead garter snakes observed along Range Road 210, April to October 2025.

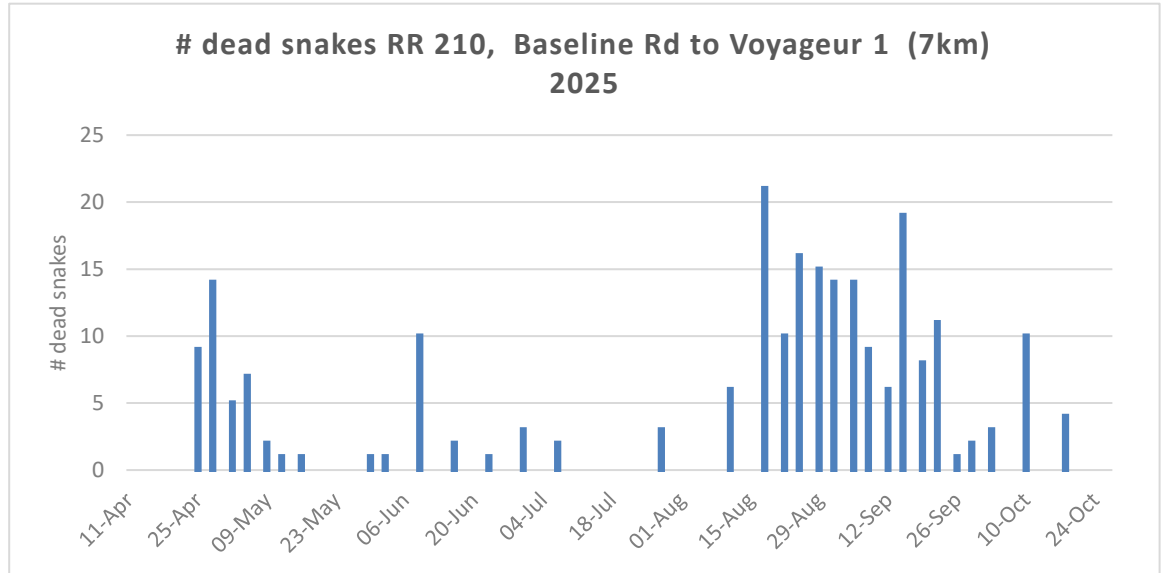


Figure 3. Number of dead snakes on RR 210 in 2025.

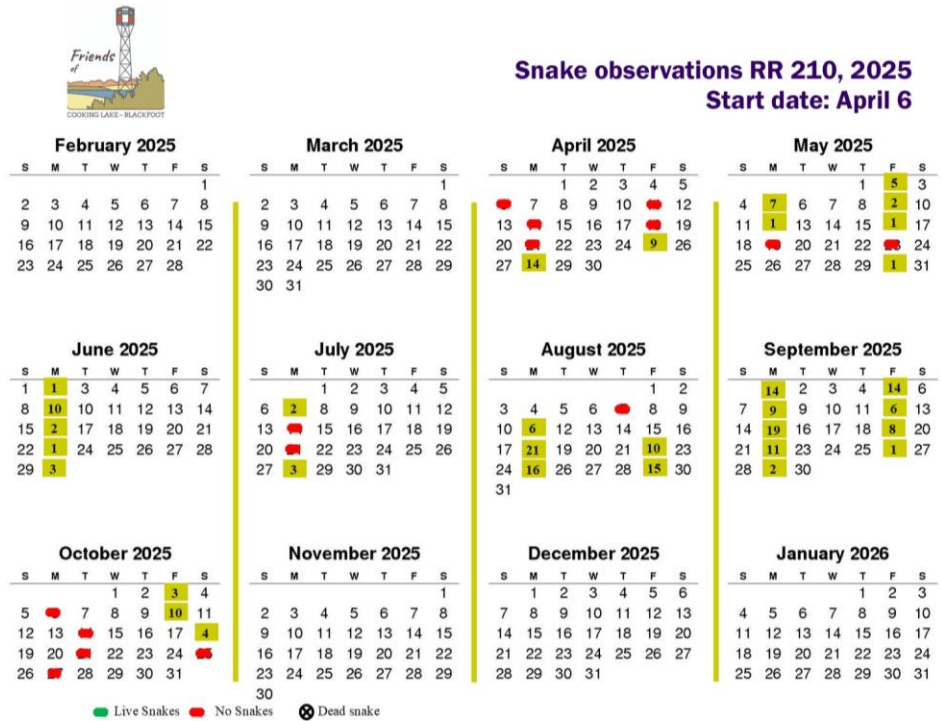


Figure 4. Mortality along RR 210 by month, 2025

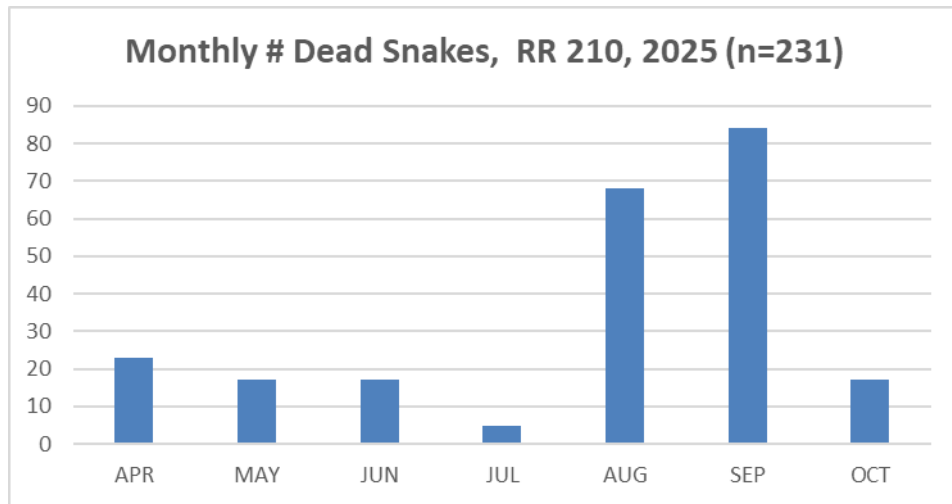


Table 1. Raw observations of dead garter snakes on RR 210 from TR 530 to Voyageur 1, 2025

Date	Y/N	# dead 210	530/ 210	Highland	dry pond	524/ 210	Wask	Voy 4	Voy 3-4	Voy 2-3	Voy 1-2	other
06-Apr	N	0										
11-Apr	N	0		previous week warm. Snow largely gone in last few days								
14-Apr	N	0										
18-Apr	N	0										
21-Apr	N	0										
25-Apr	Y	9	2	1	1				4			1
28-Apr	Y	14						3	11			
02-May	Y	5					1		2		1	1
05-May	Y	7		1					5		1	
09-May	Y	2				1					1	
12-May	Y	1									1	
16-May	Y	1										1
19-May	N	0										
23-May	N	0										
30-May	Y	1				1						
02-Jun	Y	1		1								
09-Jun	Y	10				2						8
16-Jun	Y	2				1						1
23-Jun	Y	1				1						
30-Jun	Y	3										3
07-Jul	Y	2										2

Date	Y/N	# dead 210	530/ 210	Highland	dry pond	524/ 210	Wask	Voy 4	Voy 3-4	Voy 2-3	Voy 1-2	other
14-Jul	N	0										
21-Jul	N	0										
28-Jul	Y	3		2								1
07-Aug	N	0										
11-Aug	Y	6		1	1							4
18-Aug	Y	21	2	2	1					1		15
22-Aug	Y	10		3	1		2			2		2
25-Aug	Y	16		2		1	4		1	5	3	
29-Aug	Y	15		2			2			4	2	5
01-Sep	Y	14		2	2		5					5
05-Sep	Y	14			1					1		12
08-Sep	Y	9					2		1		1	5
12-Sep	Y	6									1	5
15-Sep	Y	19		1	3	2	2				1	10
19-Sep	Y	8		1	1	1	1					4
22-Sep	Y	11				2	6		1	1		1
26-Sep	Y	1					1					
29-Sep	Y	2					1					1
03-Oct	Y	3										3
06-Oct	N	0										
10-Oct	Y	10		2	4							4
14-Oct	N	0										
18-Oct	Y	4							1			3
21-Oct	N	0										
25-Oct	N	0										
27-Oct	N	0										
		<b>231</b>	<b>4</b>	<b>21</b>	<b>19</b>	<b>8</b>	<b>27</b>	<b>3</b>	<b>26</b>	<b>14</b>	<b>12</b>	<b>97</b>

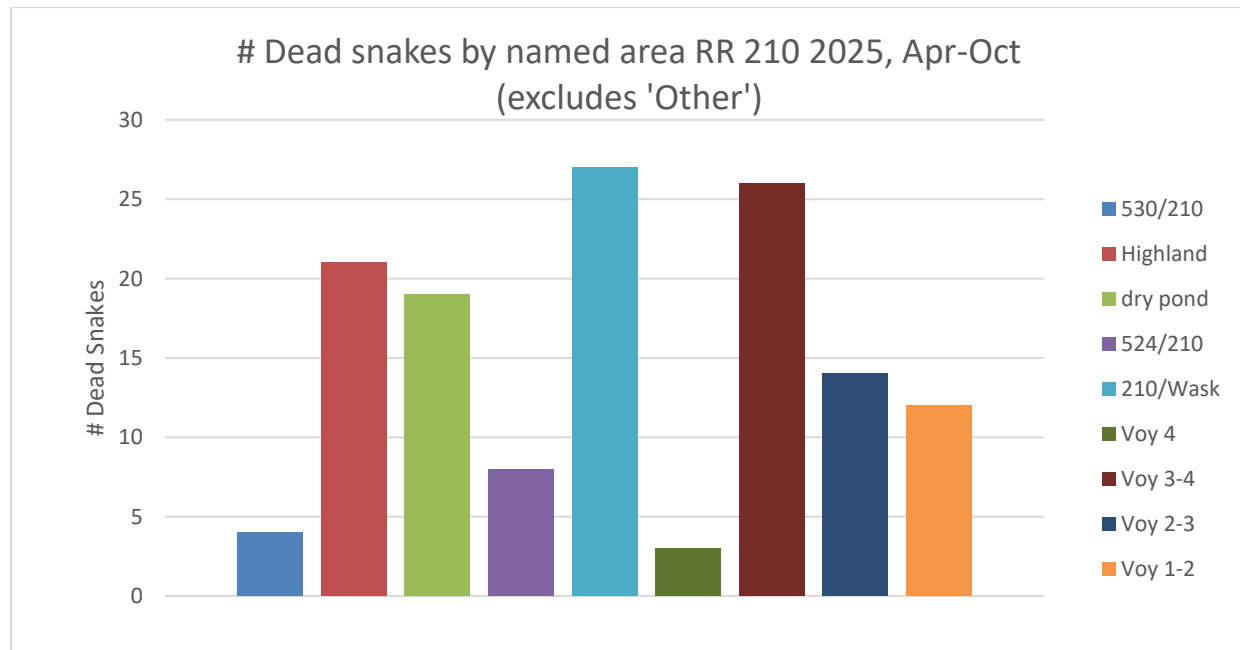
Although snakes were detected along much of the survey course on RR 210 (Fig 5), significant clusters of dead snakes occurred at 3 primary sites: Highlands (south of TR 530) (21 snakes, 9% of total dead snakes in 2025), Waskehegan entrance (27, 12%), and Voyageur Estates (1-2: 12, 7%; 2-3: 14, 6%; 3-4: 29, 13%, ) (Voy 1-4: 55, 24%) (Table 1, 2, Fig 5 a,b). In 2025, most of the spring mortality was focused at Voy 3 entrance on RR 210 - 22 of 39 (56%) of the dead snakes seen in April and May were found here (Fig 5c). Similarly, during the fall period, 68 of 169 (40%) dead snakes seen between Aug 1 and Oct 21 occurred at the same sites. The remaining dead snakes were scattered as individual records along the areas between these cluster points. Note that red stars on the map indicate known garter snake hibernacula, black circles indicate the three cluster areas in Table 2.

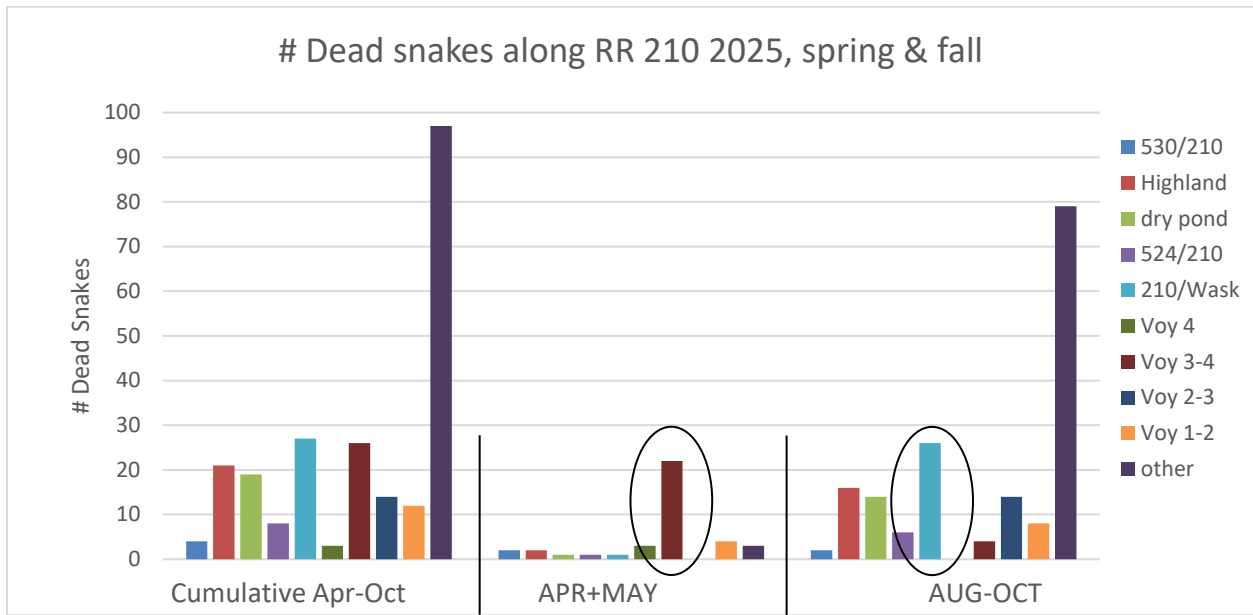


Table 2. Primary focal mortality clusters along RR 210, April to October 2025

Location	Overall (n=231)	Fall (n=169)
Highland	9%	9%
Waskehegan	12%	15%
Voyageur 4-1	24%	15%

Figure 5 a, b, c: A- map of mortality clusters along RR 210. B- cumulative tally of dead snakes at named areas along RR 210. C- cumulative & seasonal tally of dead snakes along RR 210 (includes snakes at 'other' sites distributed along the 7 km survey route).

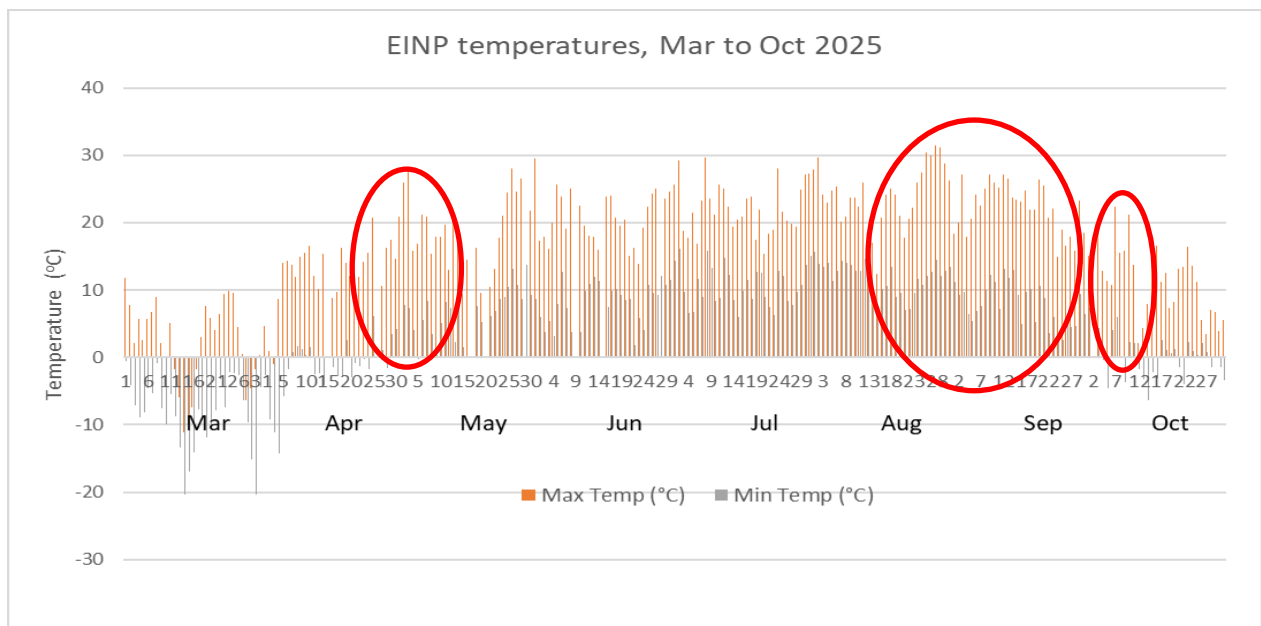




### Snake activity relative to weather

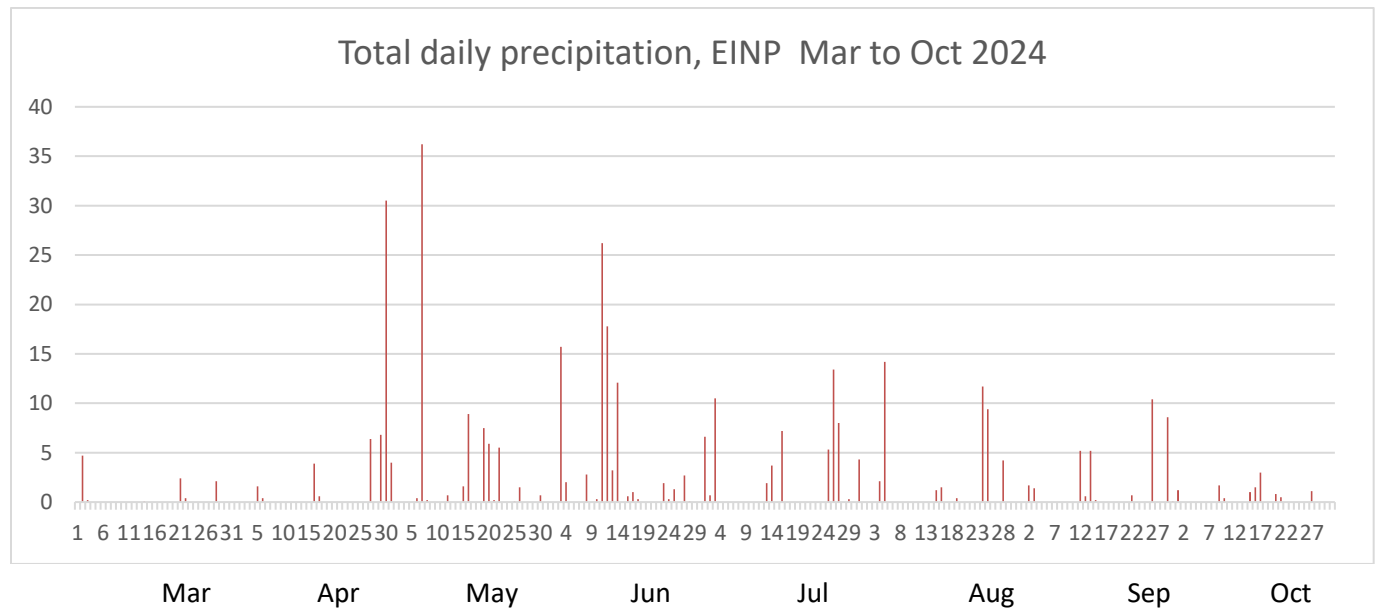
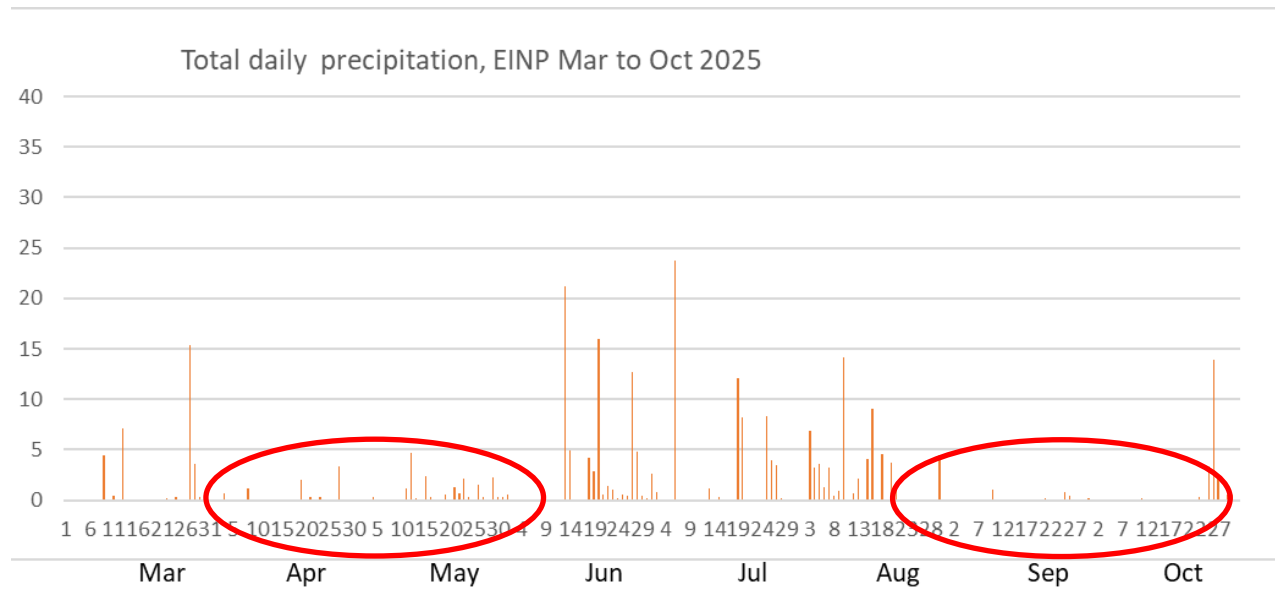
Spring mortality was associated with minimum (= night) temperatures that remained above 0C and maximum (=day) temperatures exceeded 20C in late April & early May (Fig 6). When max daily temperatures fell below 20C, mortality noticeably declined in May. Fall mortality extended over a relatively prolonged period from mid August to mid September but peaked again during a warm period in early October. There was little or no mortality when daily max temps fell below 15C and night temperatures were consistently below 0C.

Figure 6. Recorded temperatures at Elk Island weather station, March to October 2025 and 2024.



In 2025, there was a noticeable lack of rainfall in the region. This was particularly evident during April and May when the number of days with recorded precipitation was limited and when it rained, daily total rainfall was low (<5mm). Similarly in the fall, there was little or no rainfall from late August to late October. During the summer there was low but ongoing snake mortality through June and July, often in apparent association with drying local standing waterbodies adjacent to RR 210. During the fall, this included drying beaver ponds. Weather data for EINP in 2024 are provided for comparison.

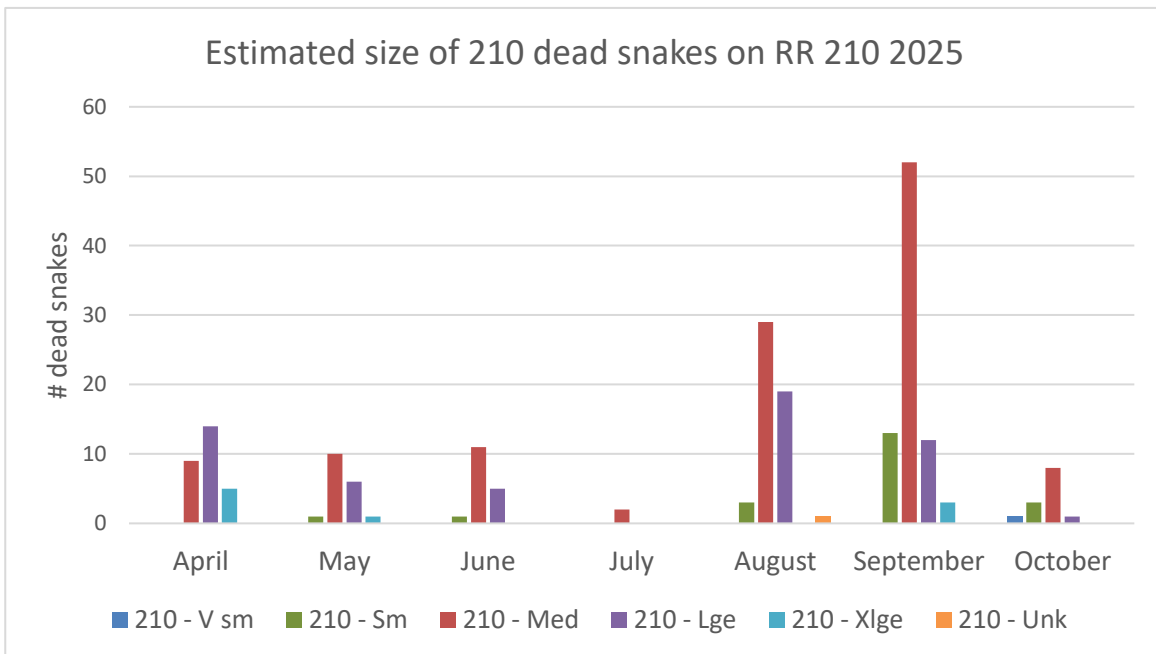
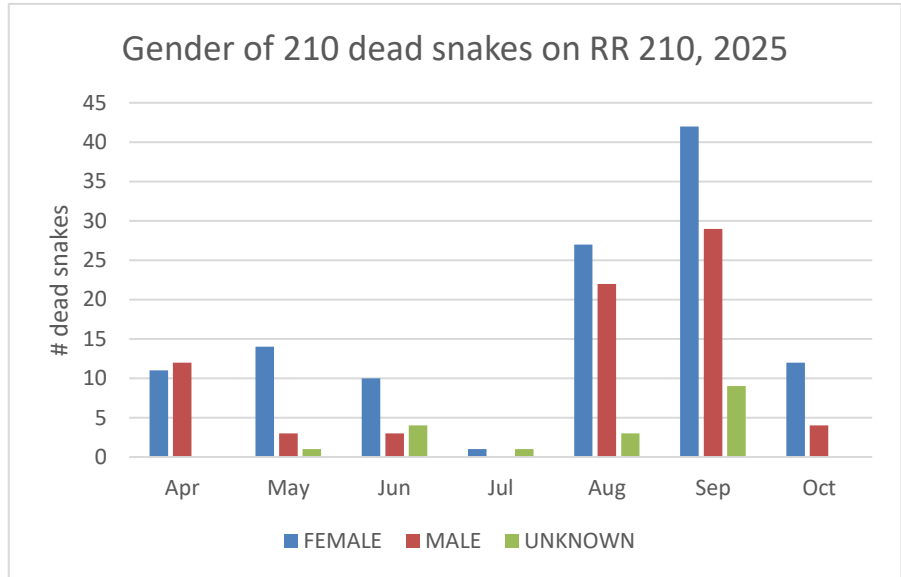
Figure 7a,b. A- daily precipitation (mm) Elk Island weather station, March to October 2025 and B- 2024



**Number, size, and gender of dead snakes [as recorded in Hwy 511 Alberta Traffic Watch]**

A total of 281 dead snakes on multiple roads was entered into the data tracking app for 2025. Analyses will be limited to snakes found on RR 210 (n=210, 75% of snakes mapped for 2025) and TR 530 (n=61, 22%). Gender (female, male, unknown) and coarse size category of snakes [v small ~15 cm, small 16-25cm, med 26-50cm, large 51-70cm, v large >70 cm] was recorded whenever possible (Fig. 8a, b). Females (n=117 of 192, 61% for which gender was determined) were the predominant gender each month other than April. Particularly noteworthy was a large female snake found dead on the road along with 13 near-term young snakes (10-15 cm long), all 14 were killed on Aug 18.

Figure 8a, b. Gender and estimated size of dead snakes on RR 210, April to October 2025

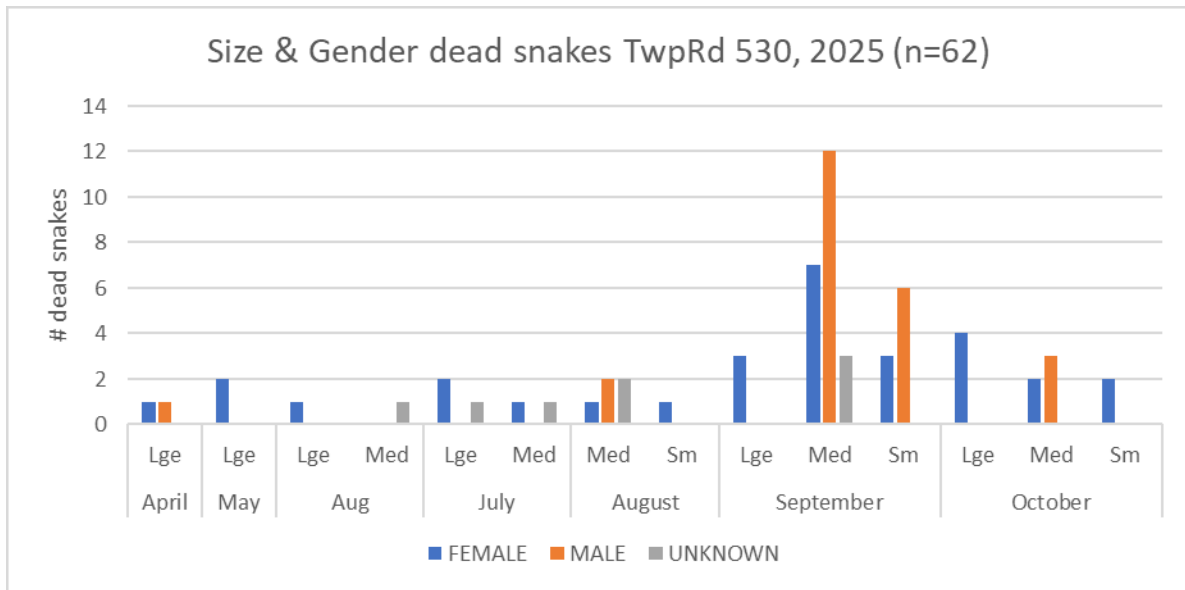
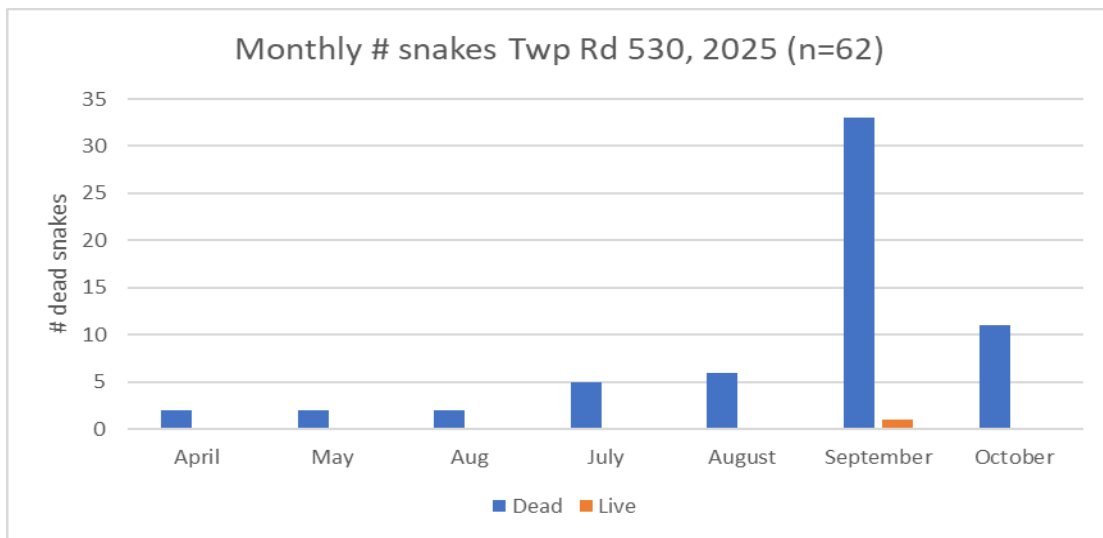


**Baseline Road (TR 530)**

Road surveys were conducted along TR 530 and TR 524 between RR 210 and RR 211 throughout the survey period in 2025. Methods were the same as those used on RR 210. Few snakes were seen on TR 524 (n=5) and are not considered further. Mortality on TR 530 was limited through spring and summer but significantly increased in the fall (Fig. 9).

Results along TR 530 reinforce the patterns seen on RR 210: increased mortality of snakes at similar periods in both the spring and fall. As in previous years, mortality during the migration periods was focused in the area east of the Quesnell entrance, particularly on the hill, and eastward to the RR 210 intersection.

Figure 9 a,b. Dead snakes along TR 530 between RR 211 and 210, 2025.



Communications

Information regarding the mortality of snakes on local roads was posted and highlighted at the Heritage Interpretive Centre at Waskehegan staging area. During spring and fall, laminated posters were displayed near local community mailboxes, on public notice boards at community halls and local vendor sites, and at notice boards at the 4 staging areas within the PRA. The poster file also was shared on some local social media networks. In addition, AB Parks displayed snake awareness sandwich boards on the entrance road into Waskehegan staging area during spring and fall migration periods for garter snakes. On May 2 2025, Parks also posted a general notice on their social media channels regarding snake mortality risk on local roads during migration. This notice was given good profile by radio and print media, including CBC.



As in previous years, two flashing road signs were placed by Strathcona County on RR 210 near the intersections with Baseline Road and Wye Road. These were activated in spring (~May 2 to June 9) and again in the fall (Sep 2 to Oct 10)

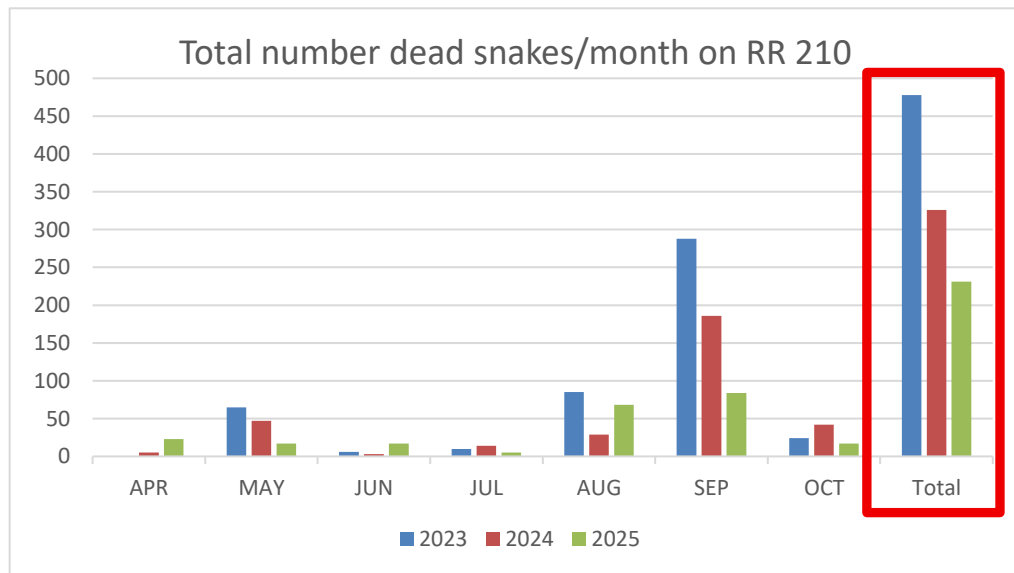
Each sign flashed 24 hrs a day with

WATCH FOR ..... GARTER SNAKES

**CUMULATIVE MORTALITY RR 210, 2023-2025**

Standardized garter snake mortality road surveys were conducted each summer from May 2023 to October 2025 (previous annual reports are available at [Friends of Cooking Lake Blackfoot Society](#)). Herein we provide a brief overview of the cumulative data from those surveys.

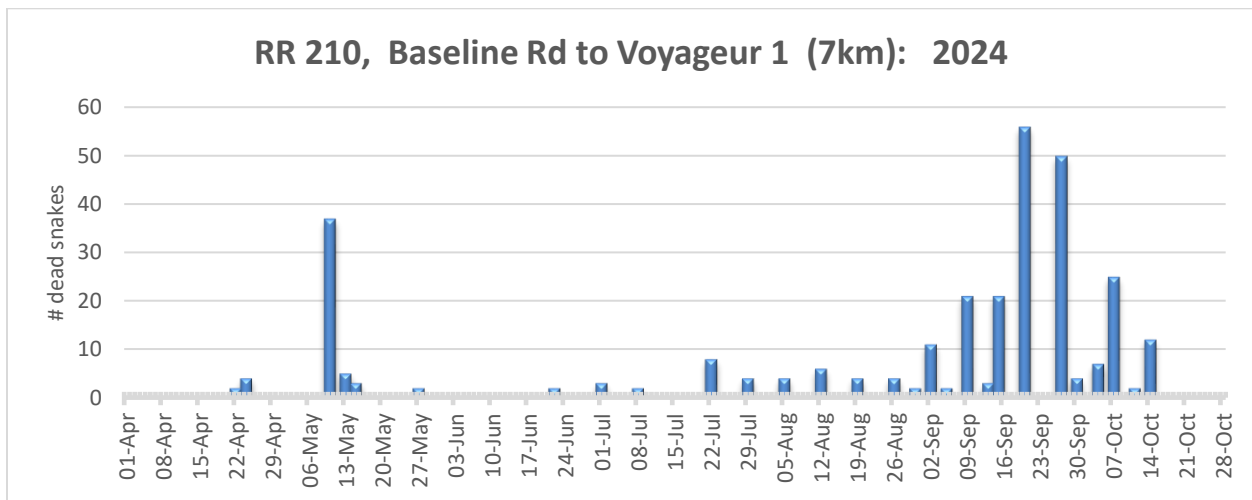
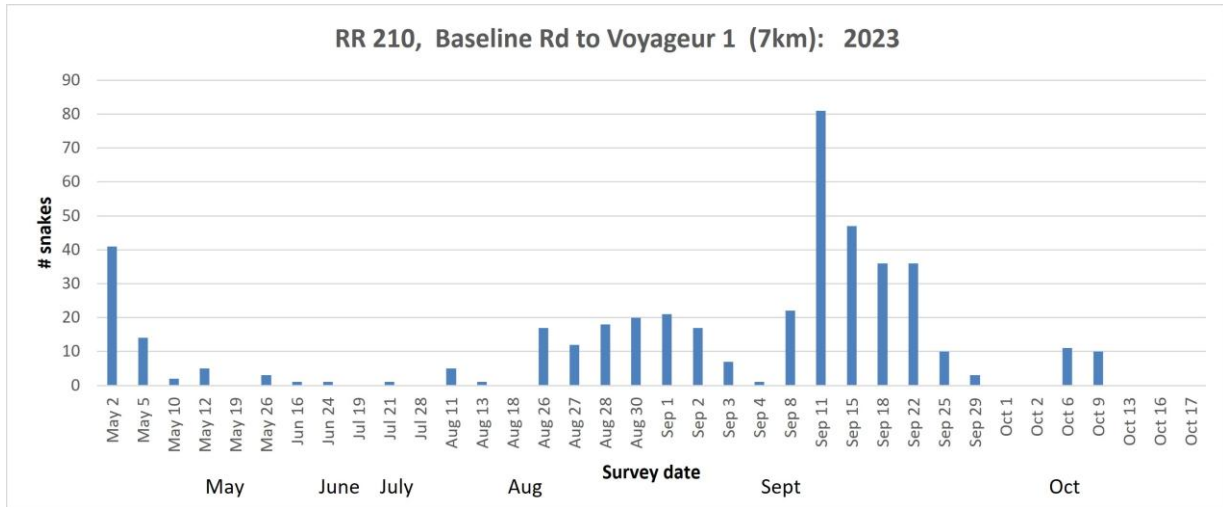
The annual total number of dead snakes tallied on RR 210 steadily declined, a pattern generally apparent each month.

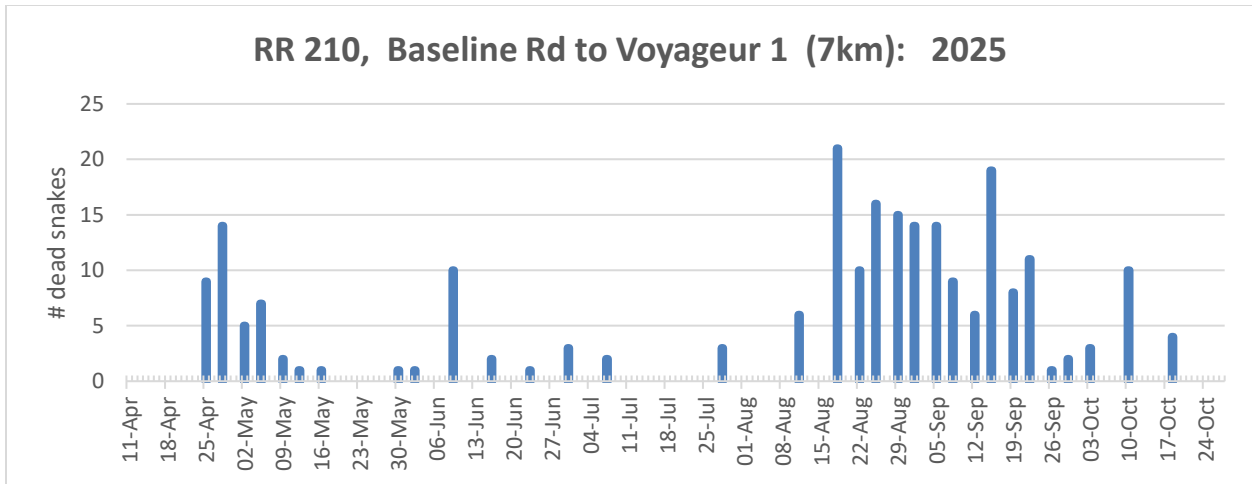


### ***Bi-modal mortality pattern RR 210 2023-2025***

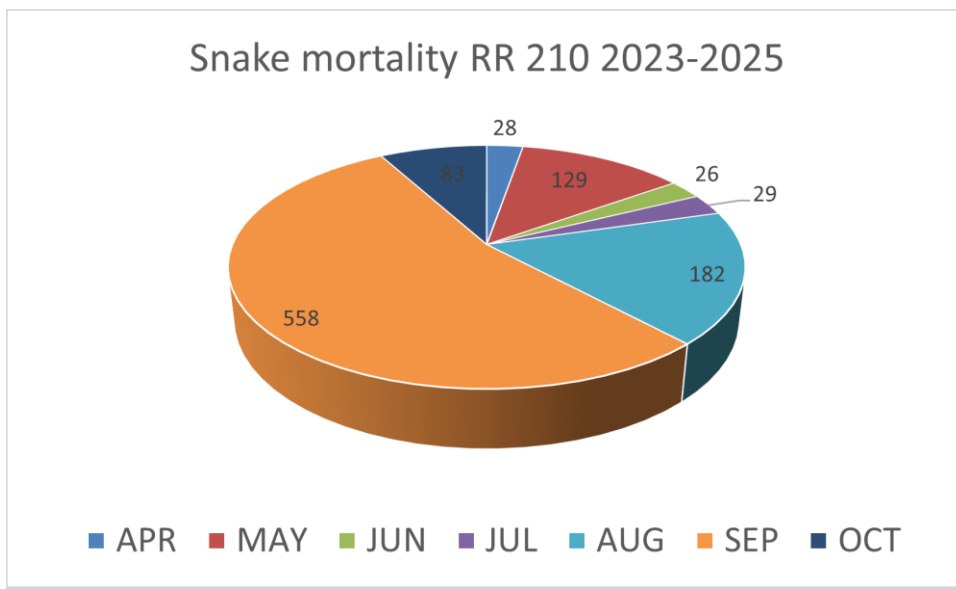
Spring and fall migration/activity periods, as reflected in road mortality, are readily apparent each year. Primary snake activity occurs in late April and early May, seemingly governed by the vagaries of specific daily temperatures. Absence of nighttime freezing temperatures and maximum daily temperatures over 20C appear to trigger spring movement. In 2024 April was relatively cold and maximum daily temperature did not spike over 20C until the 1<sup>st</sup> week of May. Mortality was then concentrated over a short time frame (a few days in early May) and was associated with the initial warm days. This differs somewhat from 2025 with extended spring mortality over the period when daytime temps were repeatedly above 20C in late April and early May. In contrast, fall mortality can begin any time after mid August and may extend well into October, apparently associated with warm days over 20C. Mortality may occur on warm days well into October but generally was not seen when daytime temperatures were below 15C.

Comparison of seasonal snake mortality on RR 210, 2023-2025. Note the declining vertical scale that reflects the steady decline in number of dead snakes seen in subsequent years.

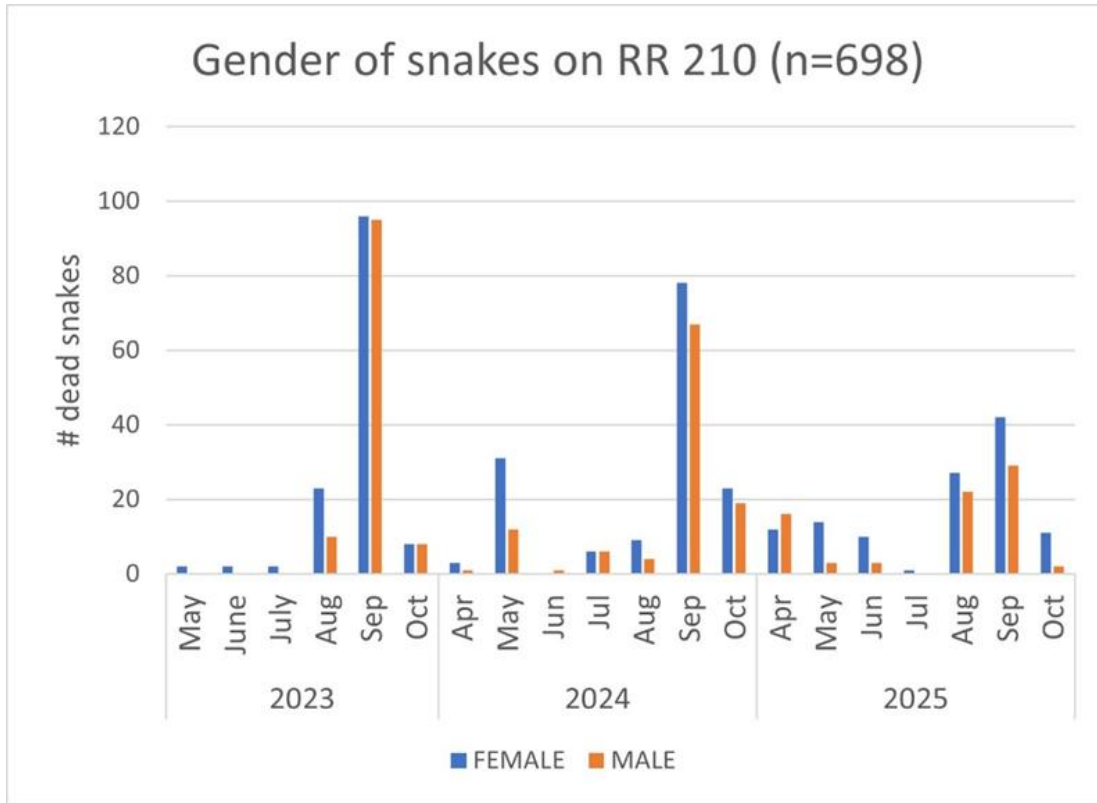




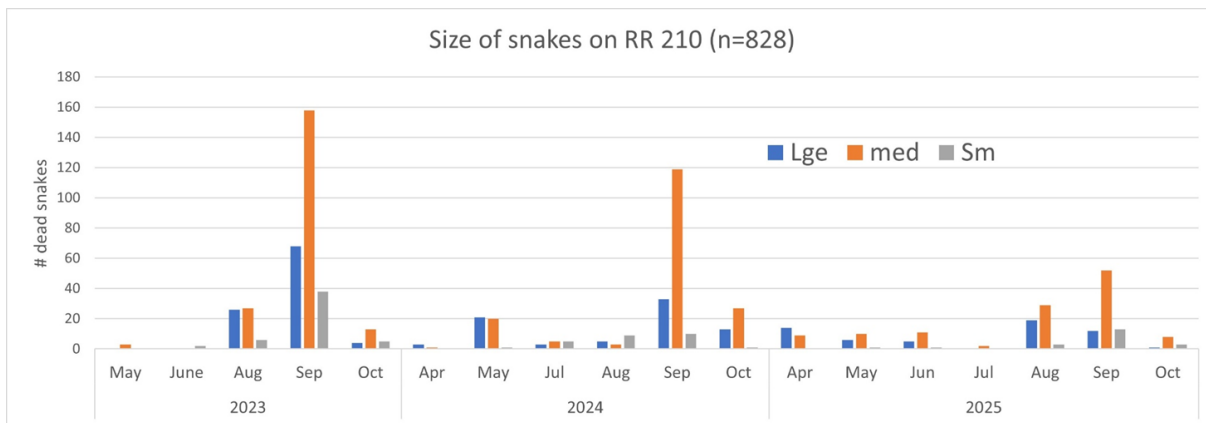
Within the bimodal seasonal pattern, the great majority of the mortality occurred in the fall activity period. Of the 1035 snakes tallied across 2023 to 2025, 80% were detected August to October compared to 15% April and May.



A cumulative scan of gender reveals that females and males are found at similar rates, with perhaps a slightly higher proportion of females in early spring.

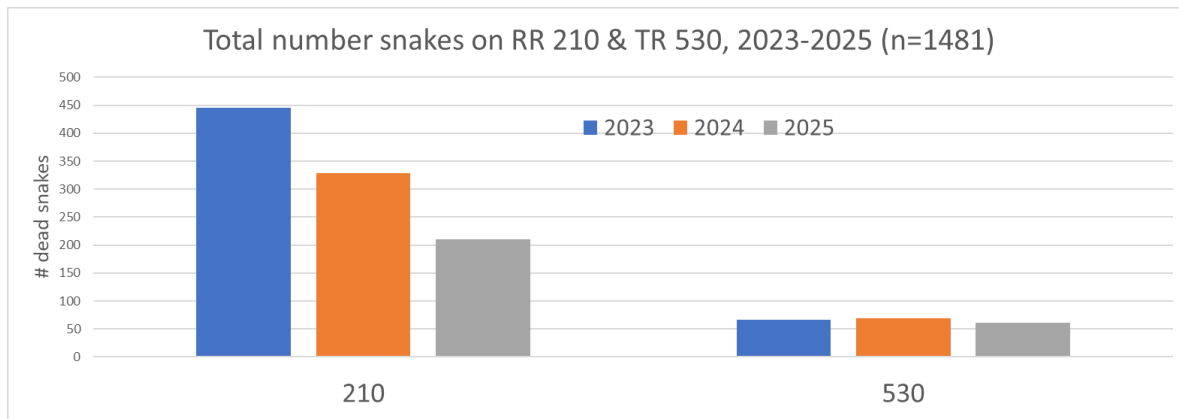
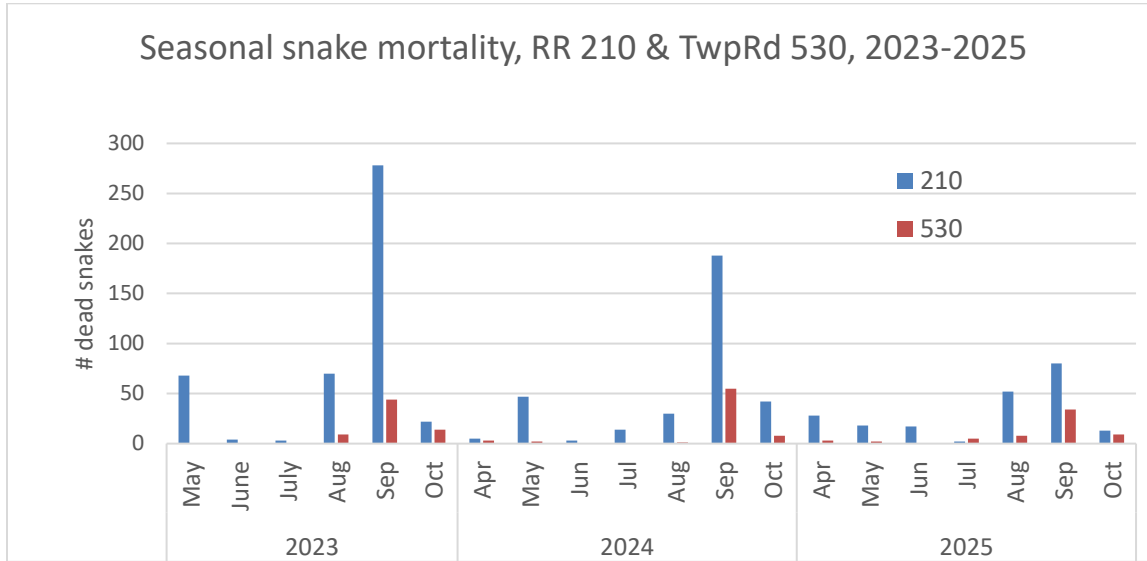


The estimated size of snakes tallied included everything from very small to extra large. However, the majority of snakes were classed as ‘medium’, which likely reflects the population distribution of age range in most garter snake populations.



### Comparison on different roads

The number of snakes found on TR 524 is too low to support analysis. However, this is not the case with mortality on RR 210 and TR 530 across the years. Timing of seasonal patterns of mortality are similar. However, the decline in total mortality across years seen on RR 210 is not apparent on TR 530.



### Discussion

Vehicle-related mortality of garter snakes is not new – in far too many places it is an ongoing risk for native snake populations. Nor is it a new occurrence along the section of RR 210 used for the surveys reported herein. In fact, quite the opposite. The mortality has been known, and ongoing, for many years.

But this is 2025 and things are different now. The scale of human activity along this section of road has steadily increased... more visitors, more residents, more vehicles, higher speeds, extended use each day and throughout the year. What was once a quiet country road is now a wide paved road, a well-used

connector and commuter corridor between Wye Road and Highway 16. Interactions with wildlife were bound to increase also. Slow-moving animals, that soak up heat from warm dark surfaces, were bound to get in the way.

Cumulative over the three years of our survey, we documented mortality of a minimum of 1481 dead garter snakes, primarily on RR 210 alongside a national park and a provincial recreation area. Temporary use of flashing road signs and opening drop-down permanent road signs on RR 210 in spring and fall serve to increase driver awareness of the increased activity and risk to local garter snakes. And no doubt, save some snakes. We recently received access to summer traffic counts on RR 210 and hope to assess traffic patterns across recent years. In the meantime, the steadily declining survey total of dead snakes tallied on RR 210 is concerning. Surely, we could work towards more successful mitigation to reduce the annual bi-modal slaughter of a key component of local ecosystems.

Data herein are limited by the methodology. While our standardized approach can document temporal, seasonal, and geographic patterns, it cannot be used to assess snake abundance or population estimates. The live and dead snakes counted are only the snakes seen during each survey. Scavengers and predators readily make use of roadkill wildlife. On occasion, ravens (*Corvus corax*) and crows (*Corvus brachyrhynchos*) are seen during a survey eating or flying away with dead snakes. And according to some sources, crows and ravens particularly enjoy snake liver as a treat. The number of coyote (*Canis latrans*) scats on the roadside noticeably increases in August, suggesting they too take advantage of the abundant free food. In addition, anecdotally, we know some motorists hit an unknown number of snakes and remorsefully remove them from the road. However, these drawbacks do not detract from the veracity of the scale of the mortality and the patterns revealed in the current data.

The bi-modal pattern of mortality in all years (2023-2025) reinforce the general patterns in the natural history of garter snakes, with particular focus on increased activity associated with spring and fall migrations away from and going towards known wintering sites. Spring mortality seems somewhat driven by local temperatures. No mortality was detected during April when night temperatures dipped on occasion below freezing (0C). Even as the spring weather warmed, mortality seems to occur only when day temperatures reach or exceed 20C. Quite noticeable in 2024, the spring mortality was delayed and then spiked over just a few days of warm temperatures. This suggests the snakes were perhaps held back in the vicinity of a hibernaculum and then once conditions were amenable, they quickly moved to their preferred summer use areas and did not tarry on or near the road. In contrast, fall migration in all years was more protracted through August to October, but again seemed more prominent when daytime temperatures were above 20C. Once day maxima fell below 15C, no further mortality was seen. Concentrated spring and extended fall migration periods are also seen in many migratory birds.

A relatively large number of garter snake hibernacula are documented on the Cooking Lake moraine (Kendell 2020), some of which occur adjacent to this ongoing strip of deadly road (Pybus, 2020, Friends of Blackfoot 2021, 2022, 2023, 2024; S Fyfe pers comm). The three primary clusters of mortality along RR 210 are in the vicinity of the known hibernacula immediately west of the road. Protected native forests atop morainal rock rubble in the protected parks on the west side of RR 210 may offer particularly suitable winter use areas for garter snakes. In addition, two of the three hibernacula are in gravel fill under buildings or in large boulder piles.

The abundance of small lakes and sloughs with adjacent wetlands and grassy uplands in the moraine landscape, all relatively undisturbed with human activity, provide optimal summer habitat for garter snakes. Summer use areas with abundant ponds and sloughs are scattered throughout residential areas and fields west of RR 210. However, 2025 was a particularly dry summer and a combination of relatively

warm temperatures and lack of standing water seemed to affect snake activity (aka increased snake mortality). An absence of spring rainfall set the scene for steady loss of surface waters throughout summer. As local ponds dried up, we detected mortality in June and July spread out along RR 210. Water is a key summer habitat component for snakes as it provides local concentrations of food and shelter for garter snakes (Russell and Bauer 2000).

Primary sites of clustered mortality differed in spring and fall this year. Mortality in spring cluster was focused at the Voyageur 3 entrance. This single site accounted for the great majority of the spring mortality found in 2025. In contrast the primary fall mortality was clustered at the Waskehegan entrance and at or between Voyageur entrances 2 and 1. Also, fall mortality was much more spread out along 210 at 'other' sites than in previous years, perhaps reflecting the continued loss of water on the landscape as the summer drying continued into the fall. Even well-established beaver ponds were completely dry by September.

The population size or local abundance of garter snakes cannot be addressed with road-related mortality data. The total annual tally of dead snakes on RR 210 decreased each year from 2023 to 2025. However, we cannot determine whether this reflects a change in population due to cumulative annual mortality or perhaps the signage that may be affecting slower speeds and increased awareness of the risk to local snakes. Similarly, it is not known how mortality data may reflect the true demographics of the local population. Medium and large snakes may be over-represented in the mortality data for a number of reasons. These animals are easier to detect during a survey from a slow-moving vehicle. Small dead snakes are more difficult to see, may be 'flattened' beyond recognition, or may be easier to remove by scavengers. Regardless, the high number of medium and large females as well as males dead on the road, and the cumulative tally of over 1000 dead snakes in three summers on only 7km of road, suggests a significant potential for serious negative effects on the reproductive capacity for the local garter snake population.

The consistent cluster of mortality along TR 530 between the Quesnell entrance and RR 210 suggests perhaps an undocumented hibernaculum in this area. The earliest mortality in April was detected here in 2024 and 2025. This suggests perhaps a south-facing winter den that warms sooner than other den sites. Efforts could be directed towards locating a winter den site in the adjacent treed area north of TR 530. Alternatively, perhaps some of these snakes are moving to and from the hibernaculum associated with the Highlands area on RR 210 south of TR 530.

Communication and collaboration are key to success in any project of the scale of road-related wildlife mortality, even if limited to a relatively small area like the Cooking Lake moraine. Our hope is that documenting the amount and patterns of mortality on one small portion of one busy road can be used to launch a higher profile, broader awareness, and increased concern for both snakes and snake mortality that will lead to effective actions to reduce the extent of the mortality. The umbrella effect of the Beaver Hills Biosphere (BHB) connecting various agencies, stakeholders, residents, and concerned citizens would seem to be a good fit for generating a closer look and perhaps a new approach to reducing traffic-related wildlife mortality in general, and specifically that of garter snakes. Initial efforts in 2023 to gather such a working group gathered steam and profile in 2025 as BHB and EINP hosted a day-long wildlife road mortality workshop in Sherwood Park on March 31. FCLB was invited to present our cumulative snake mortality data to the workshop. We were happy to do so and are fully supportive of any next steps taken that can mitigate the seasonal risk to local garter snakes on RR 210 or any road where such risk occurs.

Until physical mitigations are available, the seasonal timely deployment of flashing traffic signs by the County of Strathcona is a good first step on this path. These signs were perhaps the single best communication tool that registered with the public, as reflected in reported conversations among school children at Uncas, local residents at Antler Lake and Deville/N Cooking halls, folks gathered around kitchen tables, and comments provided in local social media posts. Informational signs and posters deployed by the County, AB Parks, and FCLB along RR 210 and at local sites where people gather or spend time also raised the profile of the issue among users of the PRA and folks who drove the road, dropped in at local businesses, collected their mail, or visited other sites where the posters were hung or information was provided on web pages and social media.

## Overall highlights:

### 2025:

- The 2025 data add to the consistent annual and cumulative patterns seen since 2023
- Spring activity aligns with spring temperatures greater than 20C and appear to reflect the activity of snakes moving away from their winter dens.
- Surveys along TR 530 between RR 210 and 211 serve as additional mortality data, and reflect similar patterns of seasonal snake activity. Mortality on TR 524 is insufficient to provide usable data.
- Results are an absolute minimum # of dead snakes. There was evidence of ravens, crows, and probably coyotes removing dead snakes. Similarly, some people apparently removed individual snakes after inadvertently running them over.
- These data provide systematic evidence of the scale of mortality rather than the specific number of dead snakes nor abundance of local garter snake populations.
- Such survey data can
  - highlight the mortality
  - identify cluster points or mortality hotspots
  - identify key time periods of significant mortality
  - inform future mitigations
  - document general gender and size demographics of local populations
  - raise awareness of garter snakes and the ecological services they provide in the Beaver Hills Biosphere
- spurious observation of tiger salamander mortality on TR 530 just east of RR 211 (at least 4 dead salamanders seen here in Sep/Oct 2025)

### ***Cumulative 2023-2025:***

- these data provide a baseline that can be used to support discussions and activities aimed at mitigating the observed risk to garter snakes
- spring mortality/activity is relatively short-term and is directly influenced by daily air temperatures above 20C and night temperatures above freezing. Late April to early May are prime mortality periods.
- fall mortality is more protracted and can extend from mid August to mid October and ceases when daily air temperatures fall below 15C
- risk to snakes is far greater in fall than in spring. Fully 80% of the detected mortality occurred August to October each year.
- well over 1000 dead snakes (minimum) on 7 km stretch of RR 210 seems inordinate. Risk is spread across both genders and all size/age classes.
- decline in mortality seen on RR 210 is not apparent on TR 530
  - perhaps TR 530 can serve as a control for possible mortality mitigations on RR 210

### ***Recommendations for 2026:***

- continue standardized observations in coming years on RR 210 and TR 530.
  - start in early April, continue into October
  - include TR 530 between RR 210 and 211 (provides perspective to RR 210).
- promote further communication and collaboration locally and throughout the Biosphere regarding
  - the value of garter snakes to local ecosystems
  - the excessive mortality on roads adjacent to hibernacula
  - local interest in reducing seasonal snake mortality
- continue to encourage those with appropriate access and authority to mitigate snake mortality on RR 210 in documented areas of highest risk
- support and encourage actions that follow up on discussions and commitments made at the BHB/EINP road mortality workshop held March 31 2026.

### ***Acknowledgements***

This ad hoc project is fuelled by the efforts of a few FCLB members. Three guest surveyors in 2025 were great company and further increased the profile of the program. EINP shared data on 80 dead snakes documented and removed during a road mortality study in 2023 & 24 that overlapped a portion of our survey on RR 210 – we added these data to our totals and gratefully acknowledge EINP for providing them. The efforts and signage from the County of Strathcona and Alberta Parks also are acknowledged. Encouragement and shared interest by a wide range of residents and visitors to the area also helps fuel further efforts to protect and conserve native garter snakes.

Prepared by Margo Pybus, on behalf of Friends of Blackfoot Society

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Working towards this:



NOT this:

