

SIGN OF THE TIMES

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Knowing the Eastern Massasauga Rattlesnake (Sistrurus catenatus catenatus) is a threatened species isn't enough to save it. Loss of habitat, fragmentation and human persecution have taken a toll on this fascinating creature. Enter the Dream Team, scientists from every level of government accepting the task of altering our negative perception of a venomous snake in hopes of changing its fast-paced extirpation.

The radio receiver gave off a strong, steady signal alerting us to the presence of Hazel, an Eastern Massasauga Rattlesnake, a species adept at camouflage. “She’s right here,” Sara Foreman, a research assistant at Killbear Provincial Park just north of Parry Sound, Ontario, motioned to an area of forest overflowing with ground cover.

My eyes scanned the area to no avail. I could not see Hazel anywhere. “There she is,” an excited Anna Lawson, also a research assistant at the park, pointed a mere six feet in front of me where Hazel was coiled in a tight, motionless ball, blending harmoniously with the ground cover thanks to her dorsal pattern of light and dark browns. Had I taken three more steps I would have been right on top of her. This is a big part of the Massasauga’s survival strategy, preferring to remain motionless, not giving away its position to potential predators or prey.

I stood in absolute awe of this symbol of wilderness. It demanded my respect simply by its presence. Yet, the Eastern Massasauga Rattlesnake has been given a bad reputation because many people have an aversion to snakes. Adding the fact that it’s a venomous species only makes matters worse. Its reputation, in part, is what has helped bring this animal close to extinction.

Spying the Georgian Bay area population of this rare species was a choice made by density. The Massasauga, once free to roam most of Southern Ontario has seen its range dwindle dramatically. Loss of habitat, ongoing since the 1800’s and excellerating after 1940 with increased mechanization for agriculture and rapid urbanization, has left the Massasauga struggling in only a few key sites in Southern Ontario. The largest continuous populations appear to be on the eastern shores of Georgian Bay and on the Bruce Peninsula. Small, struggling populations of the species exist in Wainfleet Bog outside of Port Colbourn and the Ojibway Priarie Provincial Nature Reserve near Windsor. These are the last strong holds of what could be a vanishing species.

COSEWIC (Committee on the Status of Endangered Wildlife in Canada) listed the Eastern Massasauga Rattlesnake as threatened in 1991, prompting the formation of a national recovery team. This ‘Dream Team’ has been hard at work combining world class scientific research, enlightened management techniques and public education to stop this species’ early demise.

“Historically, one other species of rattlesnake existed in Ontario, and we extirpated it quite successfully,” Kent Prior, a member of the Canadian Wildlife Service of Environment Canada and Chair of the Eastern Massasauga Rattlesnake Recovery Team was referring to the Timber Rattlesnake, not seen in Ontario since the 1940’s. “We’re starting work on conservation and recovery of the Massasauga from a valley and working our way up hill.”

The ‘hill’ Kent referred to is steep. Our society directs attention at recovering birds, butterflies and mammals for which people have a great affection. We all want elephants, tigers and pandas in our wild. However, if we want to recover rattlesnakes, how far are we willing to go? “If we’re truly being driven by ecological priorities, science and what we know as appropriate approaches,” said Kent, “we shouldn’t be preferentially treating one species over others.”

Having recorded Hazel’s location, the air/ground temperature and noting the terrain in which she was resting, we headed to the lab. What is quickly becoming the “Centre of Recovery” for the Eastern Massasauga Rattlesnake amounted to a small cabin positioned aft of the park’s maintenance buildings and, was slightly less impressive in stature as it was in performance. Over 650 individual Massasaugas have been processed through this cabin since 1992, thousands of snakes when you include recaptures, the data from which has been invaluable.

In the dimly lit confines of this makeshift lab Chris Parent, an enthusiastic and charismatic biologist known to campers, cottagers and area residence as “snake man”, was busy performing a snout vent length (SVL) measurement on an adult snake. Chris, assigned to assess the affects a highway construction project south of Parry Sound will have on the Massasauga, has been researching this species in and around Killbear for 10 years. In that time, here and through the efforts of team members in the snake’s known range, much has been learned about their behaviour due largely to pit tagging and radio telemetry.

A pit tag, the size of a grain of rice, is inserted just under the skin of the snake about three quarters of the way down the body. This device reflects a signal back to a hand-held unit which then displays a 10-digit alphanumeric code. Watching Chris take a reading was like watching a clerk ring in groceries at checkout. “These tags are very similar to what they put in dogs and cats,” explained Chris. “This snake is now an individual, not just another Massasauga.”

Radio telemetry involves surgically implanting a transmitter inside the snake’s rib cage tucked just beside the intestines. The transmitter is about an inch and a half in length and emits a signal at 720 MHz that is picked up by a receiver. In the 70’s these transmitters weighed-in at 50 grams and were being placed in snakes weighing 100 grams. Now, transmitters must weigh no more than 5% of the snake’s total body mass. “It’s rare for us to even insert a unit that is 4%,” assured Chris. “Typically we have them at about 2% body mass.”

The afternoon at Killbear was sunny and warm, but lost to us as we entered the forest in search of Val, a female Massasauga also implanted with a transmitter. I was keenly aware of my every step and had developed what I call “rattlesnake neck”. My chin seemed glued to my chest as I continually searched the ground for Val, or any other of her kind.

As it had that morning, the receiver’s loud beep pierced the silence of the forest announcing we were in Val’s neighbourhood. And, our problem remained the same, where was she? Anna, I decided, must have been a hawk in another life as she used keen eyesight to discern between ground cover and our target, spotting Val some 15 feet away.

My heart sang to see Val on the move, slowly making her way over a small log. Her dorsal pattern, consisting of oddly shaped saddles, showed clearly as she crawled towards us. Each snake’s dorsal pattern is different and the team uses this to identify young snakes. The only way to identify neonates is by this ‘fingerprint’. Neonates are too small and fragile for pit tags so, photos are taken on the back of which is listed the snakes vitals, when it was born and where it was released. Should this neonate be recaptured as an adult, it could then be identified by the photo and comparisons between its birth and current location would be of great interest in understanding the snake’s movement patterns.

For the average person, whether walking in the woods or out the back door of their cottage, seeing a Massasauga is a rarity. “They’re very cryptic and hide quite well,” Scott Parker, a recovery team leader at Bruce Peninsula National Park explained. “My search patterns for good snake hunting habitat would be a place that’s barren except for these little islands of shrubs and conifer. The Massasaugas wait inside these areas for their prey to come to them.” A mouse being afraid to run in an open area would dart from patch to patch, if he’s lucky he won’t run into a snake.

As adults, this species enjoys mice as a dietary staple but have been known to consume other snakes (garter, red-bellied), red squirrels, young rabbits and in one case was seen swallowing a vole. As for neonates, pinning down their diet isn’t as easy. It is thought that new-borns will eat whatever they can fit down their throats such as a variety of insects, small amphibians and even other small snakes. The young must feed voraciously in order to build up their energy reserves. This is a matter of life or death, for without the energy to search for their first hibernation site, they will most certainly not have the energy to survive the actual hibernation.

As I watched Val move soundlessly through twigs, branches and dried leaves, following her own scent patterns back to her hibernation site, I was struck by the importance these sites play in the life of the Massasauga. If a snake chooses a bad site they could easily perish. So, a good hibernation site is key to their survival and knowing this prompts individual snakes to use the same site year after year.

Consider the fact that the females of this species mating this summer will not give birth until next summer. Females store sperm over winter. Coming out of hibernation there

must be a physiological trigger prompting the snake to take stock of itself. When the female determines it is healthy, she has the fat reserves she requires, she then ovulates and fertilization occurs starting gestation. Gestation lasts for approximately 3 months with broods born typically in late August. If this female chooses a poor hibernation site and somehow lives through the winter, chances are grim that she would be healthy enough to carry a brood. In that instance this struggling species would lose 6 to 18 members. Hibernation sites act as an anchor point for Massasaugas and should these sites be inadvertently altered or destroyed there is no telling what the consequences would be to the species.

Following a well-marked hiking trail my guides took me past some of the most breathtaking shoreline vistas I had ever seen. The receiver's beep snapped my eyes from the beautiful Georgian Bay panorama back to the ground about my feet. We were now on the lookout for Buttercup and it didn't take long for sharp-eyed Anna to spot her. And, Buttercup wasn't alone.

Nestled beneath the ground-hugging branches of a conifer bush, Buttercup was being courted by Friday and neither snake seemed to notice our intrusion on their intimacy. Though the exact length of courtship is unknown, this particular session had been going on for several days.

Buttercup remained still but broke the tension with periodical bursts from her rattle. Friday moved cautiously closer and at times would perform an odd jerking of his entire body. "He's signaling," explained Sara. "He's letting her know that he wants her as his mate and that he's ready when she is."

After thirty minutes Friday managed to get his entire body on top of Buttercup performing what is thought to be body weighting; a way for males to show their fitness as mates. I moved in fairly close to take photos of this ritual always prepared to jump back should I annoy the lovers. Yet, the snakes seemed oblivious to this voyeurism and as we headed off the two remained engaged in this incredibly beautiful dance.

Chris was happy to hear of my courting encounter since this was a big help in determining which females may be gravid (pregnant), which in turn determines how many females will give birth next summer. However, nothing is as simple as it seems. Though the female is courted, she may simply be too young to conceive. So, in gauging the health of a population the team must determine at what age a female Massasauga first starts giving birth.

"We can find the females, but we can't age them," says Chris. "The only way to do it is to mark all the young and wait until you start finding those females gravid. And, we've just done it." Residing in the lab is a gravid female snake who was born on August 20th, 1995. Chris caught her mother and when this female was born she was marked then released. She is giving birth to her first brood in her fourth full summer of life.

“No one has done this before,” Chris was ecstatic. “Nobody has gone from baby, to baby having snakes of its own.” Patience, dedication and hard work have paid off. Unfortunately, this is but one female. Long term research is a must if the team is going to establish a pattern between a large enough group of female snakes to say for certain what the age of maturity is for this species.

The team has adopted a somewhat “human medicine” approach to the Massasauga by performing ultrasounds on gravid snakes. For five years at Killbear and this summer at Ojibway, numbers of neonates are more accurately predicted to help estimate the overall health of Massasauga populations.

I was astounded at the level of professionalism and enthusiasm of this diverse team of scientists. They have accomplished much towards providing a better understanding of a much maligned creature. Consider the diversity of the species. DNA analysis of two populations that sit one kilometre apart show more genetic divergence than does a species of warbler living on opposite coasts of Canada. Why? The snakes’ hiberniculum is their anchor from which they only move a short distance each season. When they return to their hiberniculum it determines with whom they will mate and how far females will travel to give birth. Even after the young are born they will not stray too far from that rookery, so you end up with many snakes being concentrated in a very distinct area resulting in a high degree of inbreeding and low gene flow between adjacent populations.

Other studies are being carried out on growth rates, preferred habitat and hibernation sites, all of which take time and unfortunately, money. I spoke with 10 members of the recovery team and all mentioned the work being done by Chris. The work at Killbear is internationally renowned, yet it is in danger of ceasing. “The only way I could continue the research this year was by selling T-shirts,” Chris explained. “There was a 30% tax cut in the Ministry of Natural resources, there’s just not enough money to go around.”

As I walked through Killbear I realized that I was in a protected environment. Unfortunately, snakes do not recognize park boundaries and will use whatever land is available. Though the Eastern Massasauga Rattlesnake is a protected species, it is the habitat in which it resides that seems to be under fire.

On the Ojibway Prairie Provincial Nature Reserve, the team finds itself faced with habitat surrounded by urbanization. “The population here is not in an isolated area, it is sandwiched between Windsor and LaSalle,” said Paul Pratt, of Ojibway and a leader with the recovery team. “LaSalle is building up very rapidly. A lot of areas that used to have good snake populations are now new subdivisions.”

In Wainfleet Bog, Massasaugas had found themselves near victims of an entire ecosystem collapse due to peat extraction. Thanks to the continuing efforts of recovery team members the bog is on its way to a full recovery. The future of the Massasauga looks brighter, but only time will tell.

Georgian Bay and Bruce Peninsula populations are suffering as well due to increased urbanization. Cottagers will think nothing of paving a driveway or clearing land that was once good habitat for snakes. Then these same cottagers are surprised to see a Massasauga on their property.

So, how do we coexist with this snake and make everybody concerned relatively happy?

“It comes down to political will,” says Bob Gray, with the Ontario Ministry of Natural Resources. Bob reminded me of the Sewell Commission which set in motion comprehensive planning policies to develop natural heritage systems that would identify significant wetlands, areas of natural and scientific interest and wildlife corridors. The plan was to link all of these areas on the landscape and then determine through smart development where to build. With the changing of political parties the entire program was scrapped. “In six months it was all gone,” said a frustrated Bob. “We’re back thirty years in our thinking.”

Politically it would seem so, but on a social level the team has made up ground rapidly thanks to public outreach and education programs. “Not only do we deal with members of the public that are camping in the park, we’re also dealing with a lot of people within a one or two hour drive radius of the park who own cottages,” says Chris. “We spend a lot of our time out of the park giving presentations to cottaging associations and individual cottagers.”

The team holds seminars and workshops, talks to individual campers, and has even gone door to door in neighbourhoods adjacent to snake habitat to help people gain a better understanding of this species. In fact, at one point when a snake was found on a campsite team members would move the snake several kilometres away. Now, knowing the importance of hibernation sites, snakes are only moved about 50 metres from where they were found. These encounters are a great way for the team to educate people about the snake and quell any fears they might have.

“I’m only one voice,” says Chris. “So, I’ve tried to add more voices to my own and now I have a cast of thousands and it’s growing.”

Hunting for rattlesnakes, I concluded as we searched for Emma, was a pain in the neck. After hearing Sara tell tale of finding snakes hidden under the brown, drying tall grass through which we were now walking, I simply refused to lift my head up. Since the receiver was quiet I knew Emma was not near, however I didn’t want to step on any of her friends.

Though Massasaugas are venomous and a bite from one would be extremely painful, it is very unlikely that it would be fatal. In the 50’s, two men died as a result of being bitten but it was due to lack of medical attention. Anyone who has been bitten and has received medical attention has survived.

“I was bitten twice in ‘95 and I’ve been bite-free ever since,” says Chris. And, he is still here, working on snakes. Several others on the team have been bitten, some dry bites and others had to receive anti-venom. Considering the numbers of snakes handled by this team of professionals the number of bites is extremely low.

The venom is an enzyme that breaks down protein so that the snake can subdue, more easily swallow then digest its prey. Snakes actually consider whether to use the venom in defence. More often than not, when people are bitten, it turns out to be a dry bite.

As a camper, resident or hiker you are unlikely to see one of these cryptic creatures. However, precautions should be taken. Watch where you are walking or standing, wear long pants and a good pair of hiking boots that cover the ankle. Probing into underbrush with your hands isn’t the best idea, which is why I used my eyes to search for Emma, not my hands.

I was fortunate to see five rattlers in the wild; five more than I would have if not for radio telemetry equipment. But what if one comes face to face in a chance encounter, what then? “They should consider themselves lucky,” says Scott Parker. “Stop, take a step back so that you’re at least a metre away and have a good look at it. Appreciate this beautiful creature for what it is because you may never see it again.”

A week had passed since my time with Chris and his staff at Killbear. The images of Eastern Massasauga Rattlesnakes still fresh in my mind as I walked to the library to return a book I had borrowed on snakes. I dropped the book at the front desk and was just ready to leave when I heard the librarian’s moan. She could barely even touch the book.

I asked her what was wrong and she simply answered with a disdainful, “rattlesnakes, yuck”. I spent 20 minutes happily educating her about this misunderstood animal. As I walked home, I realized I had joined the cast of thousands.

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