



Rattlesnake Tales

Vol. 18 No.1 ISSN 1705-8309 Spring 2006

Massasauga Response to Habitat Restoration

*By Joe Sage
Indiana-Purdue University, Fort Wayne*

Editor's note: This article was originally submitted in 2005

Hello all! Back in the fall of 2002, in a previous issue of Rattlesnake Tales (Vol.14 No.3), Candace Jones introduced you all to a telemetry project occurring at the Indian Springs Metropark in southeastern Michigan. My name is Joe Sage, and I have been chasing Massasauga rattlesnakes at this site for the past two years as part of my graduate studies through Indiana-Purdue University, Fort Wayne. I came on to the project in 2003 and have had a great couple



of years. I am very happy to update you all on how our snakes are doing! This project was kicked off in 2002 by Dr. Bruce Kingsbury in an attempt to examine the ecology of Massasaugas in Michigan. Historic reports suggest that Southeastern Michigan was once a haven for the

Massasasuga and supported a relatively large number of these snakes. However, due to its proximity to Detroit, this area is under enormous pressure from development, and the lands available to these animals are shrinking at an accelerated pace.

In this Issue

| | |
|---------------------------------------|---|
| Response to Habitat Restoration | 1 |
| Conservation on Private Lands..... | 3 |
| The Grass is Rattling..... | 4 |
| Lake Nipissing Adventure | 5 |
| Ask the Expert..... | 6 |
| Earthday Workshop..... | 8 |

The park sits on the edge of this rapidly expanding development, and very likely will be surrounded by new houses, shopping malls, and factories within the next ten years.

Indian Springs Metropark itself has been subjected to construction pressures these past three years, although with a more benign intent: the building of a new Environmental Discovery Center and restoration of native prairie and wetlands around the new building. This habitat restoration project is a very intensive form of management, resulting in large sections of habitat that have been completely transformed. The needs of the Massasauga have been high on the list of priorities during this process, but a bulldozer is still a bulldozer, whether or not the operator is aware that there may be rattlesnakes in front of his/her blade.

These activities have presented us with an interesting research opportunity. We have been able to monitor a number of rattlesnakes (30 individual snakes as of this date) during the entire construction process using radio telemetry. This has allowed us to document how snakes respond in their patterns of movement and habitat utilization to intensive management activities and active construction. As we continue to monitor these snakes through the restoration effort, snake responses to different restoration strategies will undoubtedly provide us with valuable insights into how and why snakes choose to live where they do, and how our actions can benefit or harm these animals.

Telemetry has revealed that snakes at this site primarily inhabit open wetlands and upland habitats, very similar to what has been reported in other parts of the snake's range. They mostly avoid areas of closed canopy, but some snakes do venture into the forests, especially in the spring and fall. Within the forest, these snakes tend to focus their activities

around light gaps, especially those gaps where there is enough light reaching the ground to promote a layer of ground cover from grasses, sedges, and herbaceous growth. Wetlands being utilized by snakes at this site are primarily a matrix of scrub-shrub and more open areas dominated by familiar marsh emergents (sedges, ferns, cattails, *etc.*). Drier uplands, primarily open old fields are also utilized at this site during warmer summer months. Historically, most of the available uplands were once farmed and are now old fields in the early stages of vegetative succession.

In the process of trying to restore native prairie and wetland communities within the study site, park staff had to completely remove the pre-existing old field habitat. They removed all of

the existing vegetation by hand and through the use of fire. In some areas, the topsoil was even stripped away in order to get rid of the existing seed bank. As you might imagine, this intensive effort created large areas of what was essentially destroyed habitat, consisting mainly of bare soil.

Although our own study started after this initial work had begun, reports from park staff and visitors suggested that these areas were once frequented by Massasaugas. What would happen to these snakes now that sections of their habitat were gone?

During 2002 and 2003, our telemetry data revealed that most of the snakes we monitored chose to stay away from the highly disturbed restoration zone and constrained their movements to isolated patches of remaining habitat or in the undisturbed wetland habitats along the periphery of the area where restoration was occurring. Surprisingly however, a few snakes still wandered out into the restoration areas, using whatever cover still remained. Most of these snakes simply migrated through the area on their way to more suitable habitat, but a few snakes, usually



gravid females, actually spent considerable time here. Occasionally, these snakes had to contend with workers and their heavy equipment. Interestingly, we found that snakes entering the restoration area almost always ended up along sections of drift fence that had been set for erosion control. It wasn't that the snakes were getting caught on the fence; there were plenty of gaps for them to get through. We think they were attracted to the fence for shelter and for improved thermoregulatory opportunities. The black fence heated quickly in the morning, and provided shade during the heat of the day.

In 2004, the restoration area exploded with new growth. Much of the area had been seeded the year before with native prairie plants, but most of the new growth consisted of weed species. By midsummer, the vegetation was thick enough that the whole area began to look more like the undisturbed areas in terms of the height and density of the vegetation present. Apparently that was good enough for the snakes because they moved back into the area en masse. It was used heavily by males and females alike, and gravid females still showed a preference for this area. In fact, all three of our gravid females gave birth in the restoration zone this year.

While it is great that the new habitat is available and now being used by snakes, the restoration is far from complete. Burns are being planned to deal with some of the weed species, and herbicide will be used to help get rid of burn resistant plants. The Indian Springs story is far from over, and the Kingsbury lab plans to continue monitoring snakes here for at least the next two years. We hope to learn more about the life history of the Massasauga, how it adapts to human activities, and how we can minimize our impacts to prevent further loss of snakes.



Enhancing Eastern Massasauga rattlesnake conservation on private lands

*By Rebecca Christoffel
MSU, Dept. Fisheries and Wildlife*

Several current research projects focus on Eastern Massasauga rattlesnake ecology in Michigan, but no work has been conducted regarding people's beliefs, attitudes, and behaviours toward these snakes. Nevertheless, the long-term viability of this species likely depends on human tolerance and support because much of its population and habitat is in private ownership. Human traits, including beliefs, attitudes and behaviours, in relationship to Eastern Massasaugas are a major focus of my graduate research.

Part of my research focuses on outreach efforts to increase individuals' knowledge about Eastern Massasaugas and to influence human tolerance for these animals. I worked in conjunction with Michigan Natural Features Inventory and the Detroit Zoo to develop and present workshops for individuals in a four-county area of southeastern Michigan (Jackson, Livingston, Oakland, and Washtenaw counties). Targeted audiences have included natural resources personnel, naturalists, landowners who have had encounters with Eastern Massasaugas, landowners living in close proximity to Eastern Massasauga populations, and the general public.

Participants were surveyed prior to and immediately after outreach programs regarding their knowledge and attitudes toward Eastern Massasaugas. Our results indicate that the programs helped to increase knowledge about Eastern Massasaugas and other Michigan snakes, and participants left

the programs with a greater degree of "like" toward Eastern Massasaugas. Participants were also asked to indicate how confident they felt in their ability to identify Eastern Massasaugas from other Michigan snakes on a scale from 1 (not confident) to 5 (very confident) after attending our programs. They averaged a score of "4" on the confidence scale after the program. This indicates that most participants felt they could make a solid species determination, and this may impact other snake populations. Often, Eastern Milk snakes, Fox snakes, and Hognose Snakes are killed due to the mistaken belief that they are rattlesnakes. If individuals can identify such animals and understand that they pose absolutely no risk to them, it is likely that they will not be killed. Another aspect of my research includes assessing beliefs and attitudes towards amphibians and reptiles including the Massasauga through in-depth interviews and mail questionnaires.

Results of my research will be used to develop outreach materials and programs. These will be aimed at increasing people's knowledge and enhancing their abilities to co-exist with the Eastern Massasauga, a potentially dangerous but very secretive and retiring reptile. A final aspect of my study will consist of an experiment to assess the effectiveness of different outreach programs in increasing knowledge about Michigan's snakes and influencing human tolerance for this segment of our wildlife resource. Understanding how people develop their beliefs, attitudes, and behavioral decisions can enhance the conservation of Michigan's plants and animals and enrich the lives of Michigan's citizens.



Photo by Ken Ardill



"The Grass is Rattling" at the Wildlife Discovery Center

*by Rob Carmichael, Curator
The Wildlife Discovery Center at Elawa Farm*

On November 1, 2005, the Wildlife Discovery Centre (WDC), a department of the Lake Forest Parks and Recreation, located in Lake Forest, Illinois, opened a new exhibit called "The Grass Is Rattling". This exhibit was made possible by a generous grant from TAP Pharmaceutical Products Inc. Featuring over

25 species of rattlesnakes, in addition to 12 species of venomous reptiles from around the world, the exhibit includes an important conservation education program about the plight of rattlesnakes, and what people are doing to save them. This unique, wildlife education program is geared towards students in grades 5-8, and is one of the largest public rattlesnake exhibits in the United States.

A pilot project on rattlesnake conservation was initiated in 2004 for 5th grade classes, with participation reaching 800 students. By the fall of 2005 word had spread, and the WDC had over 2,000 fifth grade students complete the program. "The Grass is Rattling" features the Eastern Massasauga as its primary conservation animal. Students learn how to use radio telemetry, pit tagging devices, and GPS among other instruments used to study these snakes. Fifth grade students participating in "The Grass is Rattling" program will be involved with problem and inquiry-based learning activities, including using sophisticated tracking equipment and GPS to track a

"real" rattlesnake (it's actually a model with a transmitter implanted in it that is then hidden by a member of staff from the WDC). The program culminates in a close up encounter with a Massasauga that has been safely tubed by one of the professional staff for children to touch. An outreach segment is also under way to bring this program to schools that may not be able to bus students to the site.



Tubing a Massasauga rattlesnake

So far, the feedback from teachers has been entirely positive. One teacher says: "I have been teaching for over 25 years and have taken classes to the Chicagoland Metro area's finest museums, nature centers, science centers, and zoos but our trip to see "The Grass Is Rattling" display was by far and away the finest experience my students (and me) have ever had. The setting is intimate and unique, the facilities in perfect order, the exhibits dazzling and the rattlesnakes absolutely beautiful. The conservation education program dispelled the many misconceptions that people have about rattlesnakes and now my students want to know what they can do to make sure that Lake County has Eastern Massasauga rattlesnakes! You have done a tremendous job in this life changing experience and you will now have many future rattlesnake fans to mentor. I even know what a Massasauga is now. Great job!"

Some of the future components of "The Grass Is Rattling" exhibit and program include developing an interactive website, a monthly

newsletter, and continuing our research efforts with the Eastern Massasauga. The Middlefork Savanna, located behind the WDC, is the finest black soil, tall grass savanna in the U.S. and could be a future refuge for this endangered rattlesnake. The WDC is currently conducting a herpetology survey of this site to determine the Eastern Massasauga's presence. One of the hopes is that if this snake has been extirpated from this area, the WDC's captive breeding program could coordinate a reintroduction program at this site. Our captive breeding program has proven to be very successful thus far. Massasaugas born into the program are being held back to head start them, and will potentially be used for reintroduction at this site in the future (assuming that all current populations are non existent once our initial survey is completed along with the appropriate approvals from U.S. Fish & Wildlife and the Illinois Department of Natural Resources).

When children first arrive at the WDC, they are quite nervous about seeing a rattlesnake up close. By the time that they leave, most students, if not all of them, have a profound interest in Massasaugas and a desire to see them protected. This is what rattlesnake conservation education is all about!



A Lake Nipissing Adventure

by Rhonda Hill

For the past five summers my family and I have spent 3 weeks in July vacationing on Lake Nipissing. We live in a small city called Bellaire, in the heart of Houston, Texas. We are city folk by address but county folk at the core. We have two boys, aged 8 & 10. They love to explore and always observe various snake

species during our visits to the Lake. Several years ago, while in the local Library, my youngest son saw a snake poster printed by the Toronto Zoo. I requested this same poster from the information on the front. We received the informative and full colour poster, and with its help have identified different species of snakes, including both Garter and Northern Water snakes.

In the summer of 2004 we headed up to West Arm Lodge for our annual summer get-away to Lake Nipissing. While this was only our 4th trip to the Lake as a family, we have carried on the tradition from my husband's father who first took his family to the West Arm Lodge in the late 1950s, and subsequently traveled the same route for over a dozen summers from Delaware. I think my husband would like to beat his father's record! On one of the first few days of our stay at the camp and with much apprehension, I made my way to the outhouse. It is quite cute on the outside, painted brown with yellow moon and stars. Opening the wooden door carefully, I quickly surveyed the interior for any creepy crawlies, and, seeing none present, I proceeded to position myself in the appropriate spot. Conveniently enough, the moment my pants were at my ankles I noticed a green snake slithering in front of my feet! Yikes! I yelled, no, I screamed for my boys to come get the snake. Fortunately they did not hesitate and came running to my rescue. I managed to dress myself without falling into the stinky stuff, and my boys grabbed the snake. Here is a picture of my youngest son, Wade, age 7 with my bathroom buddy. With the help of the poster we identified our friend



as a Smooth Green snake, and after taking his picture we released him. Lucky for me he decided to stay away from the outhouse for the remainder of our trip!



"Ask the Expert"

Expert advice from Melissa Tonge.

Rattlesnake Technician

Bruce Peninsula National Park

William Ritching asks: Thank you for continuing to send me Rattlesnake Tales. I recall in the 1940s and early 1950s on the Highway (or should I say trail, at that time) now Highway # 6 up the Bruce peninsula, at times there would be dozens of rattlesnakes lying flattened on the road. Perhaps it would be at times they were heading to or from their hibernacula.

I live on Manitoulin Island, and there are many stories over the years of rattlesnake presence. Vidal Island, which lies in Vidal Bay off the north shore of western Manitoulin, was called Rattlesnake Island by Native Americans. What information/history do you have for Manitoulin?

I have been fond of snakes since I was a school boy, and collected many live Milk, Garter, and Watersnakes to show at school (and relish the shrieks of the girls). There used to be two kinds of Watersnakes: brown ones and black ones. The black ones were very common in areas of the small lake (Tobacco) where our family cottage is located. Some of the black Watersnakes grew to a very large length and girth, and appeared from time-to-time along the swimming areas. I haven't seen any for about forty years. Would this black race be a melanistic form?

Answer: Thanks for pointing out one of the leading threats to rattlesnakes – roadkill. We still find many snakes dead on roads, as you did years ago. With increasing tourist traffic on Highway 6, we're trying to educate people to be on the lookout for snakes. Next season we'll be installing "Brake for Snakes" signs on various roads – ultimately hoping to increase awareness and alert drivers to their presence. Unfortunately roads provide warm basking

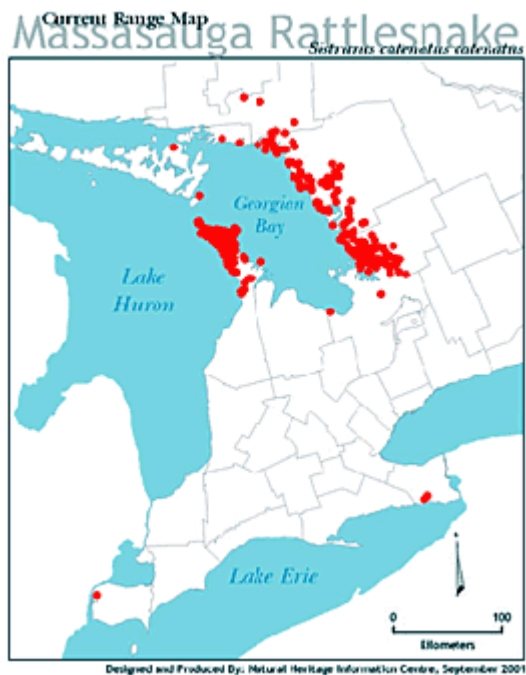
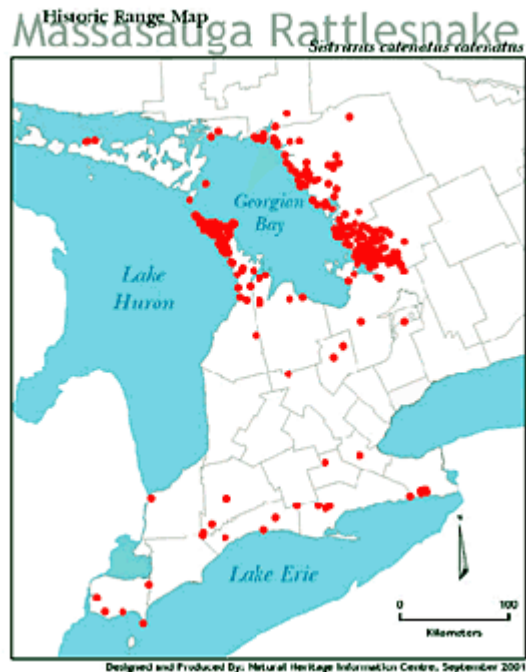
features that rattlesnakes and other reptile species, because of their basic biology, are attracted to. This is especially true in the cool evenings when the asphalt or gravel is warmer than their surrounding environment.



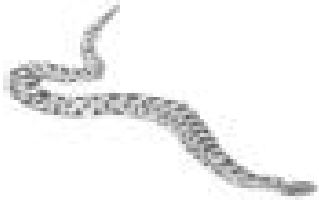
Road mortality presents an increasingly common threat to Massasaugas along Hwy 6

There are very few records of rattlesnake from Manitoulin Island. I was able to find 4 records from Vidal Island, specifically – and those all date back (the most recent records were in 1977). This lack of records may simply reflect the fact that sightings often don't make it into official records. So we'd appreciate hearing about any sightings you've had personally, or any you've heard of. Naturally, the more detail you can provide – the better.

Regarding your sightings of Northern Watersnakes, this is a species that has considerable colour variation. The dark watersnakes you were seeing likely were not melanistic, or another race – but simply dark variations. In some individuals and populations, the 'typical' brown blotchy patterning blends together so the snake appears uniformly dark in colour, especially when the skin is dry. There is also evidence that young snakes lose their bright brown colouration with age, which is consistent with your observations of black snakes being noticeably larger.



Maps detailing the historic and current ranges of the Massasauga in Ontario. Road mortality, human persecution, and habitat loss and fragmentation are the main threats to the survival of this species.



Earth Week Rattlesnake Workshop

When: Saturday, April 8th, 2006

Time: 10:00 AM to 2:00 PM

*Where: Boardroom--Administration
Building, Toronto Zoo*

**Space is limited, register NOW by
phone (416) 392-5968; Fax: (416) 392-
4979, or E-mail: alentini@torontozoo.ca**

Each year, the Toronto Zoo hosts Rattlesnake Workshops for cottagers and their friends. A donation of \$5.00 per person (\$10.00 per family) covers the cost of materials, including our conservation posters and video. Discussions about the natural history of rattlesnakes will be followed by ample opportunity to ask questions. Learn how to identify the Massasauga and meet a live rattlesnake.



*Printed on 100% recycled
paper, using vegetable
based ink!*

Volume 18, No.1

Rattlesnake Tales is a publication of the Toronto Zoo, and a contribution to the Eastern Massasauga Rattlesnake Recovery Team Education Program.

Editors:

Charlotte Cox
*Reptile and Amphibian Research
Technician*

Andrew Lentini
*Curatorial Keeper/Program
Coordinator*

Bob Johnson
Curator of Reptiles & Amphibians

Contributors:

Joe Sage
Rebecca Christoffel
Rob Carmichael
Rhonda Hill
Melissa Tonge
William Ritchling
Ken Ardill

Support for the Programme:

Human Resources Development
Canada, Canadian Museums
Canada, Environment Canada,
Habitat Stewardship Fund, Young
Canada Works

We would like to thank those who contributed to this forum for rattlesnake conservation, and we encourage our readers to submit reports, articles, letters, photos, and artwork for future issues of Rattlesnake Tales.

Editorial comments and contributions should be directed to:

Toronto Zoo
c/o Andrew Lentini
361A Old Finch Ave.
Scarborough, ON M1B 5K7
Fax: (416) 392-4979
alentini@torontozoo.ca