Eastern Massasauga (*Sistrurus catenatus*)*Venomous*

Family Viperidae (Crotilinae)
Subspecies: None currently recognized
Updated 2025


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Description/Identification: The Eastern Massasauga, or "Swamp Rattlesnake", is a small to medium-sized, short, very thick and heavy bodied species of rattlesnake ranging in total adult length of approximately 19.6 to 30.0 inches in length. The scales are very heavily keeled, and are arranged in about 24 to 27 scale rows anteriorly, and 18 to19 scale rows posteriorly. The anal, or ventral plate is single and undivided, the sub-caudal scales underneath the tail are single or undivided, and a small, horny, keratinized, segmented rattle is present at the end of the tail. The head is distinctly large, and wider than the slender, distinguished neck and rest of the body, and there are also nine (9) large, plate or shield-like scales atop the heads. The pupils are elliptical as well (although this is not a general rule of thumb for distinguishing between venomous and non-venomous species of snakes), and the irises of the eyes are a silvery, brownish, or reddish-brown in color.

On the head, a distinctive pit organ is located between the eye and nostril on each side of the head. A narrow white stripe extends from the pit organ to the posterior angle of the quadrate, or lower jaw on each side of the head. A much wider, thicker, darker black or brown to reddish-brown ocular stripe runs above this white stripe through each eye on each side of the head. The top of the head is mottled with darker gray or black ocular bands, and a pair of similarly colored parietal blotches extend to behind the head and neck. The tongue is forked, black or dark reddish. On the inside of the mouth, Eastern Massasaugas, being pit vipers, normally have a pair of large solenoglyphous fangs on the upper fore-maxillary which normally rest folded along the roof of the mouth, and are normally covered in thin, fleshy sheaths or membranes. Massasaugas also have one to two rows of tiny, recurved teeth on the maxillae and lower quadrate bones of their upper and lower jaws which are also normally covered by a fleshy membrane.

The dorsum ground color of Eastern Massasaugas ranges from gray, to tan, or brown, with anywhere

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from 26 to 40 larger, light-edged black to chocolate brown “saddle” or “bow-tie” shaped mid-dorsal blotches. On the sides, or laterals, are two to three rows of smaller, round to ovular black, dark brown, reddish-brown, or dark grayish blotches. Towards the tail, these mid-dorsal and lateral blotches grade, and form into rings or bands, and the color of the rattle may be light tan or yellowish, or darker grayish or grayish-brown. Eastern Massasaugas have 1 row of subcaudals on the underside of the tail past the ventral opening, consisting of 19 to 36 rows.

Some specimens can be much darker black in color, with their patterning much more obscured or melanistic, and were previously considered to be separate forms or subspecies. In earlier historical accounts, “rattlesnakes of the black species or variety”, or to “prairie” rattlesnakes were probably in reference to Massasaugas, if they were one of the two species of Wisconsin rattlesnakes. No subspecies of the Eastern Massasauga are currently recognized, however. The ventral scales on the underside are very wide, and arranged in a single row, ranging in color from a dark mottle black or very dark grayish, being lighter white or cream color with dark mottling more anteriorly on the underside and on the chin and throat.

Male and female Eastern Massasaugas are similar in appearance, but are sexually dimorphic in size. Males are somewhat smaller than the larger, heavier bodied females, and have 5 to 7 rings on the tail, and 25 to 33 subcaudal scales. Females have 5 or fewer tail rings, and have 19 to 29 subcaudal scales. Neonate Eastern Massasauga are similar in appearance to the adults, but have a single, keratinized rattle segment known as a “button”, are lighter colored, and have a more yellow or greenish-yellow tail tip.

Timber Rattlesnakes (*Crotalus horridus*), are Wisconsin’s only other rattlesnake, and venomous snake species, but are larger in size as adults, and do not have large, plate like scales atop their heads, instead having many smaller, finer parietal scales. A number of other, harmless, nonvenomous snakes are frequently confused or mistaken for Eastern Massasaugas, and can be very similar in color, pattern, and appearance, but do not have rattles on the ends of their tails (instead having pointed tail tips), and are not rattlesnakes. These include Eastern Hog-nosed Snakes (*Heterodon platirhinos),* Northern/Common Watersnakes (*Nerodia sipedon*), Eastern Milksnakes (*Lampropeltis triangulum*), and Eastern Foxsnakes (*Pantherophis vulpinus*).

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Range and Distribution: Eastern Massasaugas range from southern and southeastern Ontario, Canada, through central New York, and west through the Upper Midwestern United States through lower Michigan, extreme western Pennsylvania, northern Ohio and Indiana, Illinois, Wisconsin, to extreme eastern Iowa and Missouri. Massasaugas are believed to be likely extirpated from Minnesota.

In Wisconsin, Massasaugas historically occurred over much of the southern two-thirds of the state, and were historically very abundant, with many early historical accounts of them by early travelers and settlers. Massasaugas even occurred within the city limits of Madison in Dane County and in Milwaukee, Milwaukee County during early pre-settlement times, where these early reports appear valid and reliable, but were undocumented with specimens. However, by the turn of the 19th century, Massasaugas began to decline drastically in Wisconsin due to many different factors including overcollection and overexploitation, habitat loss and modification, and outright killing and persecution of these snakes, including as a result of Wisconsin's historical bounty which was placed on rattlesnakes.

By the 1950's and 1960's, their populations continued to decline due to these factors, and by 1975, were placed on the Wisconsin state endangered species list, where they remain in status to this day. Now, only a very small handful of viable, isolated populations remain left, scattered throughout the south-central, western, and west-central portions of the state.


Ventral/Belly View. © BioWeb.

Habitat: Eastern Massasaugas have always been a wetland species, being found in wetter and more moist habitats than most other species of rattlesnakes. They are a species which are very strongly associated with open-canopy wetland habitats in floodplains, especially along medium to large rivers and streams or lakes, especially near river mouths or confluences. In fact, the Ojibwe Native American name "Massasauga" literally translates to "Great River Mouth", and is very fitting for the habitat in which these snakes are found in.

Lowland, open canopy wetland habitats along these river and stream courses have always been the habitat of the Massasauga; including lowland fens, wet meadows, bogs, swamps, sedge meadows, shrub carr, wet prairies, and large, expansive marshes and lowland hardwood forest. Gray dogwood, bluegrass, and associated sedges are vegetation all common to prime Massasauga habitat, as well as adjacent uplands in the form of upland floodplain forests, prairies, or old fields.

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Feeding and Diet: Eastern Massasaugas are carnivorous, and despite the fact that they are venomous, and use their venom to envenomate and consume their prey, are very beneficial and essential components to their overall environments and ecosystems. Venom is costly for snakes to produce and to expend, and is designed and intended to be used for smaller prey, rather than for defense against larger animals. Massasaugas feed on a number of small rodents or other small mammals; mice, voles, shrews, and other small mammals may comprise as much as 85% or more of their diets. Amphibians, such as frogs and salamanders may also be eaten, particularly by neonate or younger Massasaugas, and other prey items can also include other smaller snakes, nestling or fledgling birds, small lizards, soft-bodied crayfish, and large terrestrial insects or other arthropods and invertebrates. As with other pit vipers, their loreal pits between their eyes and nostrils are used to track thermal gradients and heat signatures of their warm-blooded or endothermic prey.

Neonate Massasaugas may use their more brightly colored yellow or greenish tail tips for caudal luring of small prey.

Natural History: Eastern Massasaugas emerge from overwintering in mid to late April or May, where they are awakened or stimulated by spring flooding when the snow begins to melt. Massasaugas, unlike most other snake species, do not den or overwinter communally, or only very rarely do so, instead much more often overwintering individually in crayfish burrows (which are a prime component for ideal Massasauga habitat), mammal or other animal burrows, or within rotted out root channels of trees. During the early spring flooding, Massasaugas may cling to partially submerged trees or bushes, beaver or muskrat lodges, or slab piles or other debris above the water line, and then move to higher grounds. Less often, they may overwinter in rock crevices, old foundations, or within other piles of debris. Massasaugas usually will bask concealed in dense clumps of grass, shrubs, or other dense vegetation, where they can be very difficult to visually spot except by the highly trained eye.

When the early spring floodwaters begin to recede, Massasaugas move back into their lowland habitats in order to breed and forage. Eastern Massasaugas are primarily diurnal snakes, active during the day, especially in the early morning and early evening, but during warmer summer months, or during warm, humid, overcast weather, can become more nocturnal or crepuscular, and may cross roads or highways at night. Road and highway mortality is another significant issue for Massasaugas. Mating and breeding can take place during the spring or fall. As with other rattlesnakes, Eastern Massasaugas are ovoviviparous, giving birth from anywhere from 8 to 20 live young measuring about 7.8 to 9.8 inches in length. Gravid female Massasaugas travel to and utilize nearby, adjacent habitats in order to gestate for the summer, and gestate and give birth in mammal burrows, areas of denser shrubs or grass and vegetation, underneath or within logs, fallen tamarack or other trees, or other piles of surface debris by mid to late August or September of the following year. Gravid female Massasaugas during the summer spend almost all of their time gestating their young, and do not eat, or will eat only rarely. Males, juveniles, and non-gravid females usually tend to bask and forage more in their lowland, more closed canopy bottomland habitats.

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Neonate Massasaugas, as with other rattlesnakes, are born with a single rattle segment known as a "button", and within four or five days, enter their first shed, where subsequent segments are added to the rattle. Despite popular belief, the age of a rattlesnake cannot be determined by the number of rattles or segments, as they are added each time the snake grows and sheds, which can be up to three to five times each year, and the rattles are also brittle and can be easily broken or damaged. Newborn Massasaugas are also born with venom, and are just as fully capable of biting and injecting (and regulating) their venom as the adults, and thus the mis-notion that baby or neonates are more dangerous than the adults because they cannot control their venom, is mostly false. The newly born neonates may remain near their mother for their first several days to week or two of life, where they may use and follow chemical scent cues left by the mother.

Massasaugas, being a venomous species of snake, have long been a widely killed and persecuted species of snake, which have been major factors in their substantial population declines in Wisconsin and in other states. Wisconsin's bounty on rattlesnakes, as well as their overcollection up through the 1970's has undoubtedly taken its toll on populations, especially gravid females being especially heavily targeted in their upland habitats. Habitat loss, development, draining, and agricultural development and plowing, have also drastically reduced the amount of suitable and available Massasauga habitat in Wisconsin. Habitat modification, especially of suitable hibernacula is another major cause for their decline, as Massasaugas cannot tolerate the freezing or flooding of their hibernacula or overwintering sites, whether due to habitat modification and diking for waterfowl and other wildlife, or for other purposes, and entire populations have been lost as a result. Only through increased awareness, as well as preservation and protection from these threats and disturbances can Massasauga populations remain or be salvaged. Small population sizes, limited available upland habitat, and over-predation can also have negative impacts to their populations.

Eastern Massasaugas are slow-moving and cryptic snakes, and their first and primary means of defense are to freeze or remain still, relying on their cryptic coloration and patterning to avoid being detected. Massasaugas, as with other venomous snakes, are not aggressive snakes, but their second line of defense is to use their rattle as a warning device. This sound is produced by the beating or collision of the loosely jointed rattle segments which are partially hollow on the inside when their tails are rapidly vibrated. This rattle, unlike those of larger rattlesnakes, can oftentimes be less audible, sounding more like the buzzing of an insect or ticking of a watch. Sometimes, their rattle might be barely audible at all. This rattle serves to warn other animals (as rattlesnakes do not hear their own rattle), and may also serve to distract predators away from their heads. However, Massasaugas, and other rattlesnakes, do not always rattle before they strike.

Are Eastern Massasaugas "Dangerous"? Should People Be Worried About Them?
Striking repeatedly if the threat persists is a Massasauga's next line of defense. Drop-for-drop, the venom potency of Eastern Massasaugas is quite potent, and is primarily cytotoxic and hemotoxic, although this may vary on many different factors and among different populations or even different individual snakes.

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They are the more potent of the two Wisconsin rattlesnake/venomous snake species; however, despite this venom potency, are not generally highly dangerous to humans, as their fangs are very small, and their quantity of venom injected very small.

There have been no authenticated deaths or fatalities caused by Massasaugas in Wisconsin in the last several decades, and thus may be due to, a large, part, their rarity in the state, thus making a bite or encounter highly unlikely for most individuals. The vast majority of bites and/or subsequent fatalities by Massasaugas in Wisconsin took place during earlier centuries when these snakes were far more abundant, and when modern medicine and healthcare were much less timely and readily accessible, and treatment methods much less developed (consuming alcohol or whisky was the primary means for treating venomous snakebites in Wisconsin back then). Despite being a venomous snake, and the fact that one should certainly always be careful and aware of their actions and surroundings when in any potentially suitable habitats of a venomous snake species, while also taking the time to properly learn to identify the potential snake species found in any given area of Wisconsin, while respecting and admiring them from a safe distance in the highly unlikely chance that one is seen or encountered. The statistical likelihood of the average person, however, encountering, let alone being inadvertently bitten by a Massasauga in Wisconsin, now, is extremely unlikely, at best. They are by no means easy snakes to find in Wisconsin, to say the in the very least.

Despite being venomous, Eastern Massasaugas can have a number of natural predators aside from humans. These can include many large or predatory birds such as birds of prey (hawks, owls, eagles, egrets, herons, and turkeys), some other snake species, and many carnivorous mammals including skunks, opossums, raccoons, coyotes, foxes, weasels, minks, otters, and other mammals.

Conservation Status: In Wisconsin, Eastern Massasaugas are currently listed as a State of Wisconsin “Endangered” Species, and have been since 1975. Furthermore, Eastern Massasaugas are also listed Federally as a Federally-Threatened Species. The Eastern Massasauga is the only federally listed herp species in Wisconsin. Eastern Massasaugas are currently IUCN Red-List Least Concern (LC).