

Wildlife Damage Management Fact Sheet Series

Snakes

Kristi L. Sullivan and Paul D. Curtis

Cornell Cooperative Extension, Wildlife Damage Management Program

Seventeen species of snakes, which occupy a variety of different habitats, can be found in New York State (Table 1). Eight of these species—the water snake, brown snake, redbelly snake, eastern garter snake, ribbon snake, ringneck snake, smooth green snake, and milk snake—occur statewide. Of these, the garter snake is the most common and the species most likely to be encountered near residences. Others, like the eastern worm snake or eastern massasauga, are rare and occur in isolated patches. The eastern hognose snake and the eastern worm snake are species of special concern in New York State, the timber rattlesnake is threatened, and the eastern massasauga and the queen snake are endangered. Of the 17 species of snakes,

three—the northern copperhead, eastern massasauga, and timber rattlesnake—are venomous. The other species are non-venomous. Snakes do not actually cause damage, but an occasional snake that enters a home or other building may be considered an unwelcome visitor. All snakes native to New York State play an important ecological role, both as predators and as prey for other species.

General Biology

Snakes are specialized animals with elongated bodies and no legs. They have no ears, externally or internally, and no eyelids, although they do have a protective window over the eye. A snake's organs are elongated. They have a long, forked

tongue that helps them smell. Gaseous particles from odors are picked up by the tongue and inserted into a two-holed organ, called the Jacobson's Organ, at the roof of the mouth.

The two halves of a snake's jaw are not fused together but are loosely connected by a ligament, allowing it to swallow food much larger than its head. Snakes are poikilotherms (temperature varies with outside environment) and are not very active. Therefore, one meal may last them several weeks. Because snakes are poikilotherms they hibernate during cold winter months during which they consume no food. Some snakes, like the milk snake, lay eggs in loose soil, hollow trees, or piles of sawdust. Others, like the garter snake, give birth to live young.

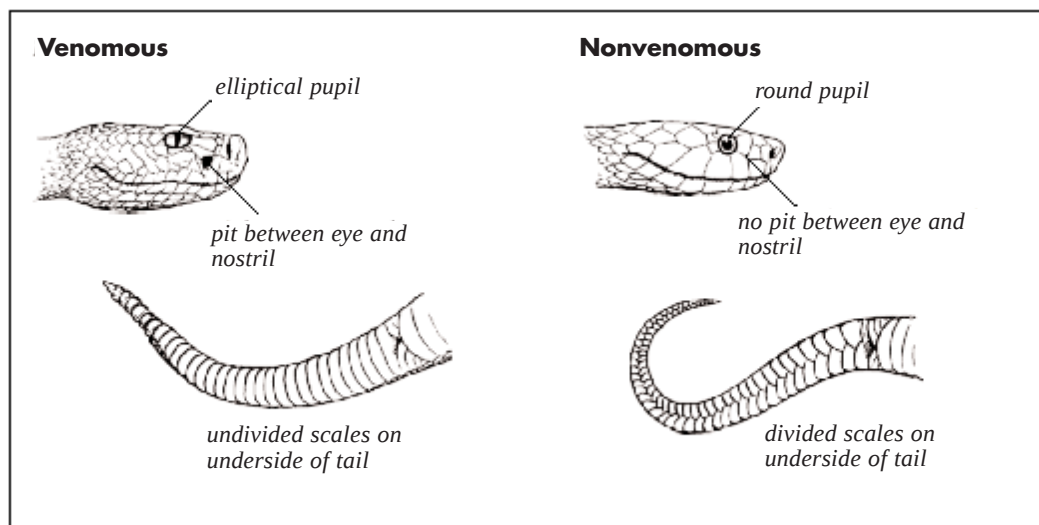


Figure 1. Distinctions between venomous and nonvenomous snakes

Snakes are very faithful to specific den and nesting sites in their home range, which they may share with snakes of the same or different species. Snakes also may use the same nesting sites year after year. Because they are very tied to the sites they use and may occur in large numbers in those places, they are very vulnerable to habitat destruction and persecution.

Habitat and Food Habits

Snakes live in a variety of different habitats. Some, like the eastern worm snake, live underground, rarely venturing onto the surface except on warm, humid nights. Others, such as the green snake, live in grassy openings. The water snake and ribbon snake make their homes in wetlands and near other bodies of water. Most snakes, however, prefer sunny areas where rock piles, logs, and other debris provide cool, shaded hiding places. Around the home snakes are attracted to stacks of firewood, old lumber piles, junk piles, rock walls, old wells and foundations, flower beds with heavy mulch, gardens, shrubbery growing against foundations, banks of streams and ponds, unmowed lawns, abandoned lots and fields, basements, and barn lofts (especially where rodents are abundant).

The most common species that people encounter in and around the home in New York are the garter snake, milk snake, and water snake. Garter snakes use a wide variety of habitats, from woodlands to marshes to fields. These snakes are variable in color and pattern. The basic color is dark brown or green with three yellowish stripes down the sides and back. They may reach lengths of two feet but are typically smaller. Garter snakes feed on earthworms, amphibians, carrion, insects, small birds, slugs, fish, crayfish, and other snakes.

The milk snake is frequently encountered in barns or other areas where its food—rodents and other snakes—may be present. The milk snake is boldly patterned (brown or reddish blotches on a light gray to tan body) above with a distinctive black and white checkered underside. The milk snake may vibrate its tail when annoyed.

The water snake is common in aquatic and semiaquatic habitats such as rivers, brooks, wet meadows, ponds, and swamps. It prefers areas with branches or logs overhanging the water or boulders near dams and bridges. As an adult, it is a stout animal typically dark brown to black with lighter-colored bands and splotches along its length. Although not venomous, the water snake is an aggressive species that will not hesitate to bite. These snakes often will sun on boat docks to the consternation of many beach-front property owners.

In addition to the snake species most commonly found around homes, several others may be encountered. The northern brown, redbelly, ringneck, and green snakes are all small, slender species that are well described by their names. These species feed on insects, spiders, earthworms, slugs, and amphibians.

The northern brown snake is brown to grayish in color with a broad light stripe bordered by dark spots down its back.

The northern redbelly snake is typically brown, bronze, or slate gray on its back, with an underside of red, orange, or occasionally yellow.

The ringneck is slate gray, black, or brown with smooth scales that give it a satin appearance. It is distinguished by a complete yellow band around its neck. The ringneck feeds primarily on salamanders but will also eat earthworms, insects, and an occasional fish.

Beautiful and light green in color, the smooth green snake is unmistakable and striking in appearance. This small, docile species feeds on crickets, grasshoppers, caterpillars, beetles, spiders, centipedes, and millipedes.

The eastern ribbon snake is slender and striped and resembles the garter snake but has a much longer tail, accounting for one-third or more of its total body length. It has three bold yellow stripes that run along its reddish-brown back. The ribbon snake prefers to feed on amphibians but will also eat fish and insects.

A fascinating creature, the eastern hognose snake has a thick body and an upturned nose. It has a yellow, gray, brown, olive, or black background color, with a pattern of large rectangular spots down the middle of the back that alter-

nate with dark spots on the side.

Hognose snakes put on a defensive display when frightened, spreading the skin around their necks like a cobra, hissing and lunging. Nevertheless, they almost never bite. Hognose snakes prefer to feed on toads, though they will also take frogs, salamanders, small mammals, birds, and invertebrates.

The northern black racer is a large black snake with smooth scales, a white or gray throat, and a dark belly from its throat back. Black racers feed on a variety of prey, including other snakes and the young of their own species.

Though usually smaller, the black rat snake can reach a length of up to eight feet. Black with a white or yellow chin and throat, it differs from the black racer in that its belly is a mixture of white and black. Black rat snakes feed on small mammals, birds, and bird eggs and are adept climbers.

The copperhead is a copper-colored, thick-bodied venomous snake. It has dark yellowish or light brown bands that alternate with darker bands that form an hourglass pattern along the length of the snake. Though often confused with other nonvenomous snakes, the copperhead has the distinctive characteristics of venomous snakes including a broad, triangular shaped head and vertical pupils. Copperheads eat small mammals such as mice and voles, small birds, amphibians, insects, and other snakes.

The timber rattlesnake is a large, thick-bodied snake with a rattle at the tip of its tail. The rattlesnake has two different color phases, yellow to brown (yellow phase) or gray to black (black phase). The rattlesnake's primary foods are mammals, including mice, shrews, chipmunks, squirrels, and rabbits.

Description of Damage

Snakes are attracted to cool, damp, dark areas associated with buildings, particularly if the structure is home to rodents or insects. Snakes may enter houses through torn screens, open basement windows, or cracks in foundation walls or floors. They may also be found in barns, sheds, or other outbuildings. Snakes may bite if threatened or handled. Many species will excrete a foul-smelling musk if handled.

Nonvenomous snakes



Black rat snake



Common garter snake



Eastern hognose snake



Eastern milk snake



Eastern ribbon snake



Northern black racer



Northern brown snake



Northern ringneck snake



Northern water snake



Red-bellied snake

Venomous snakes



Northern copperhead



Timber rattlesnake

Table 1. Snakes of New York

Common Name	Habitat	Distribution and Abundance	Disposition
Black rat snake (<i>Elaphe o. obsoleta</i>)	Woodlands, thickets, field edges, farmlands	Scattered pockets in upstate New York	Large size makes it intimidating
Common garter snake (<i>Thamnophis sirtalis</i>)	Almost all damp environments	Throughout New York	Most are docile
Eastern hognose snake (<i>Heterodon platirhinos</i>)	Sandy soils, wetlands, and occasionally on rocky slopes	Coastal plains of New York and Hudson River Valley	Usually docile but can put on an aggressive display
Eastern massasauga (<i>Sistrurus c. catenatus</i>)	Marshy areas or bogs in western New York	Two small, isolated populations in Onondaga and Genesee Counties	Defensive
Eastern milk snake (<i>Lampropeltis t. triangulum</i>)	Variety of habitats with brushy or woody cover	Throughout New York	Docile
Eastern ribbon snake (<i>Thamnophis sauritus</i>)	Stream edges, swampy areas, wet meadows, ponds, bogs, and ditches	Throughout New York	Docile
Eastern worm snake (<i>Carphophis a. amoemus</i>)	Sandy areas, dry to moist forests, weedy pastures	Coastal plains of New York and north to Albany County	Docile
Northern black racer (<i>Coluber c. constrictor</i>)	Wooded areas, fields, roadsides, swamps, clearings	Southern New York, Long Island	Most are docile but large size may be intimidating
Northern brown snake (<i>Storeria d. dekayi</i>)	Almost every habitat type	Throughout New York	Docile
Northern copperhead (<i>Agkistrodon contortrix mokasen</i>)	Forested rocky ridges, wooded swamps, near pond or stream edges	Patches in the lower Hudson Valley	Defensive
Northern redbelly snake (<i>Storeria o. occipitamaculata</i>)	Moist woods, hillsides, upland meadows	Throughout New York	Docile
Northern ringneck snake (<i>Diadophis punctatus edwardsii</i>)	Moist, shady woodlands	Throughout New York	Docile
Northern water snake (<i>Nerodia s. sipedon</i>)	Aquatic and semi-aquatic	Throughout New York	Aggressive
Queen snake (<i>Regina septemvittata</i>)	Lowlands by streams and small rivers with rocky or sandy bottoms	Small pockets in western New York	Most are docile
Shorthead garter snake (<i>Thamnophis brachystoma</i>)	Fields, meadows	Southern tier counties	Most are docile
Smooth green snake (<i>Liochlorophis vernalis</i>)	Grassy fields, mountain meadows, marshes	Throughout New York	Docile
Timber rattlesnake (<i>Crotalus horridus</i>)	Steep hillsides, rocky ledges, streamsides	Lower Hudson Valley, parts of western New York and the southern Adirondacks	Defensive

Laws and Regulations

In New York, snakes are unprotected unless threatened (timber rattlesnake) or endangered (eastern massasauga and queen snake).

Preventing Damage

Repellents

One snake repellent, Snake-Away, is registered for use in New York but only against rattlesnakes and checkered garter snakes (not present in the state); it has been shown to be ineffective against other species. The active ingredients of this repellent are sulfur and naphthalene.

Exclusion

All openings 1/4 inch in diameter or larger should be sealed to exclude snakes. Snakes may enter buildings at the corners of doors and windows as well as around water pipes and electrical service entrances. Holes in foundations should be sealed with mortar to exclude snakes. Holes in wooden buildings can be sealed with fine mesh hardware cloth (1/8 inch) or sheet metal.

Trapping

Snakes can be captured using a funnel trap and drift fences constructed of 1/4- or 1/2-inch mesh hardware cloth. The drift fences guide the snakes into the funnel end of the trap. The drift fence should be 2 feet high and 25 feet long. Posts should be located on the outside of the fence.

A funnel trap can be made by rolling a 3-x-4-foot piece of 1/4-inch hardware cloth into a cylinder about 1 foot in diameter and 4 feet long. An entrance funnel can be made similarly and fitted into one end of the cylinder. The other end of the cylinder should be closed with hardware cloth. Attach the drift fence to the open end of the funnel. Snakes often seek a dark place to hide, so covering the cylinder will make it more attractive to them.

Inside homes or buildings, if a snake is visible it may be captured by scooping it into a large garbage can, covering it with the lid, and carrying it outside. All of New York's nonvenomous snakes have very short teeth and can be handled safe-

ly with heavy leather gloves. If the snake cannot be located you may attract it to an accessible location by placing piles of damp towels or burlap bags along a wall. Cover each pile with a dry burlap bag or towel to slow evaporation. Snakes are attracted to these damp, cool piles. After the bags or towels have been out for a couple of weeks, use a large scoop shovel to pick up the pile, put it into a large garbage can, and take it outdoors during the middle of the day when snakes are likely to be inside or underneath the pile.

It is always best for the individual snake to leave it alone and in its normal home range. If the snake must be removed, however, be certain to relocate it to an area of suitable habitat.

Cultural Practices

The most effective way of deterring snakes from frequenting areas around the home and garden is to reduce the amount of food and cover available to them in those areas. Mow closely around homes and outbuildings, store firewood away from residences, and eliminate junk piles and piles of rocks. In addition, reducing layers of mulch around shrubs and flowerbeds will discourage small animals that serve as food for snakes. Flower and shrub beds serve as convenient cover for the snakes to hide and should not be planted around the foundation if you want to minimize snake encounters.

Safety Concerns

The best way to avoid being bitten by a snake, venomous or otherwise, is to keep your distance. Most snakebites occur when snakes are handled or cornered. To avoid being bitten by a snake when hiking, always look before putting your hands or feet down as you climb over rocks and logs and always wear sturdy shoes or boots.

If you are bitten, the first step is to determine if the snake is a venomous species. New York's venomous snakes leave one or two puncture marks. Our nonvenomous snakes will leave a faint U-shaped mark caused by their numerous tiny teeth. It is always a good idea to become familiar with the venomous

snakes in your area, including the outdoor places you visit. Few areas of New York, however, harbor venomous snakes. There are several ways to differentiate between venomous and nonvenomous snakes. Venomous snakes belong to the pit viper family and are so-named because they have a "pit," or opening, in the side of the head between the eye and nostril (Figure 1). Venomous snakes also have elliptical-shaped eyes as opposed to the round eyes of nonvenomous snakes. In addition, venomous snakes have undivided scales on the underside of the tail whereas the scales on the underside of the nonvenomous snake's tail are divided (Figure 1).

If bitten by a venomous snake, you should remain calm and seek immediate medical assistance. Commercial snakebite kits, which suggest making lacerations in the area of the bite and applying suction and tourniquets, are not recommended. Snakebites by venomous species found in New York occur rarely and are seldom fatal among healthy adults.

References

- Byford, J. 1994. "Nonpoisonous Snakes". In *Prevention and Control of Wildlife Damage*. S. Hygnstrom, R. Timm, and G. Larson, eds. Lincoln: University of Nebraska Cooperative Extension.
- Conant, R., and J. T. Collins. 1991. *A Field Guide to Reptiles and Amphibians: Eastern and General North America*. 3rd ed. Boston: Houghton Mifflin.
- Harding, J. H. 1997. *Amphibians and Reptiles of the Great Lakes Region*. Ann Arbor: University of Michigan Press.
- Johnson, G. 1994. *Snakes of New York*. A public service brochure of the SUNY College of Environmental Science and Forestry. Syracuse, N.Y.: SUNY-ESF.

Cornell Cooperative Extension

Helping You Put Knowledge to Work

This publication is issued to further Cooperative Extension work mandated by acts of Congress of May 8 and June 30, 1914. It was produced with the cooperation of the U.S. Department of Agriculture; Cornell Cooperative Extension; and College of Agriculture and Life Sciences, College of Human Ecology, and College of Veterinary Medicine at Cornell University. Cornell Cooperative Extension provides equal program and employment opportunities. D. Merrill Ewert, Director.

Alternative formats of this publication are available on request to persons with disabilities who cannot use the printed format. For information call or write the Office of the Director, Cornell Cooperative Extension, 365 Roberts Hall, Ithaca, NY 14853 (607-255-2237).

This information is presented with the understanding that no product discrimination is intended and no endorsement of any product mentioned or criticism of unnamed products is implied.

Additional copies of this publication may be purchased from Cornell University, Media and Technology Services Resource Center, 7 Cornell Business & Technology Park, Ithaca, NY 14850. Phone: 607-255-2080. Fax: 607-255-9946. E-mail: resctr@cornell.edu.

A free catalog of Cornell Cooperative Extension publications and audiovisuals is available from the same address, or from any Cornell Cooperative Extension office. The catalog also can be accessed at www.cce.cornell.edu/publications/catalog.html.

Illustration by Rae Chambers, the Pennsylvania State University

All photographs except those of the red-bellied snake and black racer, ©Jack H. Hecht/LMS Engineers. Red-bellied snake and black racer ©Jesse Jaycox.

Produced by Media and Technology Services at Cornell University

www.mediasrv.cornell.edu

Printed on recycled paper

147WCF51 300/400 3/01 2M CR MTS00028f