

Snakes

Species:

This account will focus on the four species that are often found near homes (the common garter snake, eastern milk snake, black rat snake, and northern water snake). There are 17 species of snakes in New York. Eight of them are statewide. Listed below are the species found throughout the state, and the rarest species, because three of them receive special legal protection.

New York is home to two endangered snakes (Eastern massasauga and queen snake), one threatened species (timber rattlesnake), and two species of special concern (eastern hognose snake and eastern worm snake). Although the category, “species of special concern” does not give any extra protection, it does show that the population is low enough to worry biologists.

For more information and color photographs, see Cornell’s wildlife damage management fact sheet about snakes.

Nonvenomous snakes, usually docile:

Found statewide—

- Common garter snake, *Thamnophis sirtalis*
Common near homes.
- Eastern milk snake, *Lampropeltis t. tiangulum*
Common near homes.
- Northern brown snake, *Storeria d. dekayi*
- Smooth green snake, *Liochlorophis vernalis*
- Northern redbelly snake, *Storeria o. occipitamaculata*
- Eastern ribbon snake, *Thamnophis sauritus*
- Northern ringneck snake, *Diadophis punctatus edwardsii*

Found only in certain parts of the state—

- Black rat snake, *Elaphe o. obsoleta* (found only in scattered pockets, upstate). **Common near homes.**
- Queen snake, *Regina septemvittata*. (rare, in scattered pockets in western New York). **Endangered.**
- Eastern hognose snake, *Heterodon platirhinos* (coastal plains and Hudson River Valley). **Species of special concern.**
- Eastern worm snake, *Carphophis a. amoemus* (coastal plains and north to Albany county). **Species of special concern.**
- Shorthead garter snake, *Thamnophis brachystoma* (southern tier only).

Nonvenomous, aggressive (found statewide):

- Northern water snake, *Nerodia s. sipedon*.
Common around homes with nearby ponds.

Venomous, defensive (found only in certain parts of the state):

- Eastern massasauga, *Sistrurus c. catenatus* (rare, in Onondoga and Genessee counties only). **Endangered.**
- Timber rattlesnake, *Crotalus horridus* (rare, in lower Hudson Valley, parts of western New York, and the southern Adirondacks). **Threatened.**
- Northern copperhead, *Agkistrodon contortrix mokasen* (lower Hudson Valley).

How to tell a nonvenomous snake from a venomous one in New York:

Nonvenomous snake:	Venomous snake:
Pupil: round	Pupil: like a cat’s eye, vertical
No pit between the eye and nostril	Pit between the eye and nostril (the 3 venomous snakes in NY are all pit vipers)
Shape of head variable, often slender	Broad, triangular-shaped head
Scales underneath the tail, toward the tip, are divided	Scales underneath the tail, toward the tip, are undivided

Size:

Black rat snake: Up to 4 1/2 feet long.
Garter snake: 2–4 1/2 feet, usually smaller.
Milk snake: Up to 4 1/2 feet long. Sometimes confused for the copperhead.
Water snake: Up to 4 1/2 feet long.

Signs of their presence:

- Water snakes often sun themselves on boat docks.
- Milk snakes and black rat snakes are frequently found in barns.
- On cool days, you may find snakes (especially the black rat snake) resting on top of the heating ducts in buildings heated with forced hot air.
- Sounds: Silent, except for the rattlesnake, which rattles, and the milk snake, which may also vibrate its tail if annoyed.
- Scat: Elongated, whitish. The scat of a black rat snake may be large.

- Large shed skin (over 2 foot long): Probably from a black rat snake.
- Evidence of their feeding: Hard to identify, because they swallow their prey whole.
- Garden and crop damage: None, because they are strictly carnivores.
- Building damage: None, because they use only existing holes and entryways, and don't create others.

Diet:

Carnivores. Black rat snakes eat mostly small rodents and birds. Garter snakes eat mostly earthworms, but also slugs, amphibians, fish, crayfish, insects, small birds, other snakes, and carrion. Milk snakes eat rodents and other snakes. Water snakes eat mostly fish, also amphibians, insects, and crayfish. Other snakes add spiders, bird eggs, and rabbits to the menu.

Typical activity patterns:

Social style: Solitary, but may hibernate with other snakes, even those of different species.

Daily activity: Mostly diurnal. Milk snakes are usually nocturnal.

Hibernator? Yes. Snakes will often hibernate (usually from October/November to March/April) in a large group that may include snakes of different species.

Migrates? No, but they do move to hibernating site.

Where found:

Distribution in NY and the Northeast: The common garter snake, milk snake, and water snake are common throughout New York. The black rat snake is only found in certain spots in upstate New York. There is another species of garter snake (the shorthead garter snake) that is common, but only in the southern tier.

Habitat:

Black rat snake—woods, fields, rocky hillsides, river bottoms. Often found in barns or other areas that are home to rodents.

Garter snake—wide variety of moist areas, from woodlands to marshes to fields.

Milk snake—usually seeks brushy or woody cover in many of same habitats favored by black rat snake. Also often found in barns or other areas that are home to rodents and other snakes.

Water snake—rivers, brooks, wet meadows, ponds, and swamps, preferably still or slow-moving water, in areas with overhanging branches and rocks (for cover and basking). Common near dams and bridges. Often suns on boat docks.

Black rat, garter, and milk snakes will follow their prey into barns and houses, usually in basements but sometimes attics. That's especially true for the black rat snake, because it's an excellent climber. Most snakes prefer sunny areas where rock or wood piles and other debris provide cool, shaded hiding places. They move from sunny to shady areas to regulate their body temperatures.

Territory and home range: Not generally territorial, but snakes are faithful to den sites ("hibernacula") in their home range. They'll reuse these sites from year to year, and are sometimes found in large numbers. This makes them vulnerable to habitat destruction and persecution.

Breeding habits:

Pair bonding style: Polygamous.

Mating dates: Black rat: May–June. Garter: first few warm days after emerging from hibernation, usually mid-March–May, then mates again in the fall before entering hibernation. Milk snake: June. Water snake mates in April–May and again in the early fall.

Egg-layers: Black rat and milk snakes lay eggs in loose soil, decaying wood, or sawdust or manure piles. Black rat snakes lay their eggs from May through early July. Milk snakes lay theirs in mid-June–July.

Live young: Garter and northern water snakes.

Birthing/eggs hatch dates: Garter snakes give birth July–early September. Northern water snakes give birth in August–early October. The eggs of the black rat snake hatch between July and September, those of the milk snake from late August–October.

Clutch size: Black rat snake: average 14 (6–24).

Garter: av. 14–40 (3–85). Milk snake: av. 13 (6–24). Northern water snake: av. 20–40 (10–76).

Weaning dates: Young are able to fend for themselves at birth or upon hatching.

Common nuisance situations:

Time of year: Spring through fall.

Snakes don't damage buildings or eat crops. They only enter buildings through existing holes, cracks or "doors" (such as an open window). Some people are afraid of snakes. Others welcome them, because some snakes eat mice and rats and help to control those pest populations. Remember, however, that if a snake can get into a home, so can other creatures.

What are they doing?

- These snakes sometimes hibernate in buildings, especially the basements of old houses with stone foundations. They usually enter houses through torn screens, open basement windows, cracks in the foundation, or through gaps next to pipe and cable entrances.
- They follow prey (mice, insects) into cellars, crawl spaces, attics, barns, sheds, garages. They may also be found in wood piles and debris, in heavily mulched gardens, and under shrubs, tarps or planks. They seek cool, damp, dark places.
- Their presence may frighten or annoy people. Several species, including the garter snake, may emit a foul and musky smell when handled.
- Disease risks: salmonellosis (food poisoning).
- Injury risks: nonvenomous snakes have tiny teeth. They leave a faint, U-shaped bite mark. Their bites rarely hurt much or cause problems, with the exception of the northern water snake, which is known for its nasty bite. Few people encounter New York's venomous snakes, and fewer still are bitten—and even then, the bites are rarely fatal. A bite from one of New York's venomous snakes (copperhead, massasauga, timber rattlesnake) will swell, hurt, and turn black and blue. Children and the elderly are at greatest risk for a severe reaction. If bitten, remain calm and get medical help. Do *not* use a commercial snake bite kit; they tend to do more harm than good.

De-bunking myths about snakes:

- If bitten by a venomous snake, do NOT try to suck out the poison. Do not slice the wound. Get medical help.
- Snakes don't dig. They can't make holes.
- The milk snake and northern water snake (both non-venomous) are often confused for the copperhead or the water moccasin (both venomous).

Legal status in New York:

The black rat snake, garter snake, milk snake, and northern water snake are unprotected. As are New York's other snakes, except:

Massasauga: **Endangered.**

Queen snake: **Endangered.**

Timber rattlesnake: **Threatened.**

Best practices*Remove their food sources:*

- Grains, pet food, and bird seed will attract mice, insects, and other species, which then attract snakes. Keep these foods in mouse- or insect-proof containers. Exclude insects and mice from your buildings.
- Reduce the amount of mulch in your garden, around trees and shrubs (again, this will discourage mice and other potential snake food).

Reduce their shelter:

- Mow closely around the building.
- Remove wood piles, junk, and piles of rocks.
- Don't plant right next to the foundation, because that provides cover for snakes and many pests.

Prevent them from entering building:

- Seal all openings that are larger than $\frac{1}{4}$ " with mortar, expanding foam, cooper mesh (Stuf-Fit®), $\frac{1}{4}$ " hardware cloth, or sheet metal.
- Fences may keep them out. Use $\frac{1}{4}$ " hardware cloth. The fence should be 3 ft. high, buried 1 ft. deep, with the bottom edge bent outward into a "L"-shaped shelf that sticks out at a 90° angle to prevent the snakes from slipping under the fence. Fences are more likely to work well around a small area. Otherwise, high maintenance needs may make this impractical, because some snakes would be able to travel through chipmunk tunnels that pass under a fence.
- Although snakes cannot create holes, they will use holes that were made by rodents and other animals. To prevent the problem from happening again, you may need to identify the maker of the holes and exclude them, too.

Trapping strategies:*Direct capture methods and live traps for non-venomous snakes:*

- Pick them up, wearing heavy leather gloves for protection. Support the snake's entire body to keep it calm. Hold snakes behind the head, to keep them from biting you.
- With care, snakes can also be captured with a "snake stick," which is a catchpole modified for snakes. A forked stick can also be used (carefully!) to pin down a snake.
- They can be scooped into a garbage can using a scoop or shovel.

- To live trap water snakes, add a brick-sized piece of Styrofoam to a minnow trap (so the trap will float, allowing the snake to surface for air). Bait with about a half-dozen minnows. Attach a rope to the trap for easy retrieval, then float it in near the shoreline.
- If the snakes can't be found, you can lure them to a spot where they can be easily captured. Place piles of damp towels or burlap sacks on the floor, near the walls. Cover the pile with a dry burlap bag to keep it moist. In a few days, return to the pile during the middle of the day, when the snakes are most likely to be there. Scoop up the pile with a large shovel, put it into a large garbage can, and carry it outside.
- Several variations on the above technique: Use a board or a piece of plywood instead of the pile of towels or burlap sacks. Place some decomposing grass clippings on top of the board, which should be 1" off the ground. Dead mice or mouse droppings placed underneath the board will help to attract snakes. Check every few days. This technique works well with garter snakes and black rat snakes, but is not as effective with water snakes.
- Create a reptile tube trap, based on a technique suggested by HSUS animal capture consultant, Dave Pauli. Inside this trap, the temperature should be just right for the snake—more appealing than the surrounding area. The trap is a piece of thin-walled PVC tubing that's 2–3 ft. long. Drill a few 1/8" air holes along the length of the tube. Cap one end. In cold weather, place a disposable handwarmer, battery-operated electric sock, or heating pad in the far end of the tube, along with some soft cotton rags. If you have fresh rodent droppings, you may want to toss a few in there, too. (In hot weather, substitute an ice pack or cold, wet rag for the heat source.) Then drill a 1" hole into a cap and use it to cover the other end of the tube. Although the snakes can leave the trap, they usually stay inside because it's more comfortable for them. You can install a one-way valve by affixing a 1 1/2" stiff plastic circle over the inside of the cap. The snake can push its way in, but can't leave easily. (This trap also works with other reptiles, such as lizards.)
- Glue boards designed for mice will also catch smaller snakes. You may be able to release the snake unharmed by pouring a little bit of cooking oil onto it. Some biologists believe the oil harms the snakes.

Venomous snakes:

- Only experienced snake-handlers should capture venomous snakes. They're often handled using a catchpole and then transferred into a sturdy container.

Using a one-way door to exclude snakes from a building:

- Technique developed by wildlife consultant William Bridgeland. Roll aluminum insect screening into a tube, then attach it over the entry hole, which is usually found in the foundation. Angle the tube up slightly, and flatten its outer end a bit. Leave the tube in place for at least two weeks while snakes are active (summer). Don't substitute another material for the insect screening. Snakes may use scent to find their entry holes. Insect screening scatters odors, which would make it harder for the snakes to locate the entry hole, but other materials might retain their scent and direct the snakes back to the opening. If they find the opening, they may be able to get back inside.

For NWCOs with a commercial pesticide applicator license:

- There's a repellent, Snake-A-Way, registered for use against rattlesnakes in New York. Its effectiveness varies greatly depending on the species.

Preferred killing methods:

First, discuss the situation with your customer. Is it really necessary to kill the snake? (And remember, is it legal?) Would removal and exclusion be sufficient? If not:

- Shooting, using bird shot (target the head)
- Stunning and decapitation

For more information:

- Cornell's wildlife damage management fact sheet on snakes: www.wildlifecontrol.info/ccewdmp/Publications/Snakes_factsheet.pdf
- Species identification: www.kentuckysnakes.org
- Massasauga fact sheet: www.dec.state.ny.us/website/dfwmr/wildlife/endspec/massfs.html
- Timber rattlesnake fact sheet: www.dec.state.ny.us/website/dfwmr/wildlife/endspec/tirafs.html