

SNAKES:

Information for Kentucky Homeowners
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Snakes are perhaps the most feared and hated animals in Kentucky. These irrational feelings toward snakes are caused by a lack of understanding and the superstitions handed down from one generation to another.

Most people shudder at the very thought of a snake because they do not understand the unknown. Snakes are not mysterious at all, and their colorful, fascinating life histories don't justify the anxiety many people feel about them.

Of the 33 snake species found in Kentucky, only four are poisonous. These are the Northern copperhead, Western cottonmouth (water moccasin), timber rattlesnake, and pygmy rattlesnake.

While venomous snakes should be respected and approached with caution, most snakes a homeowner encounters in an urban environment are harmless and beneficial because they eat mice and other rodents.

This publication seeks to dispel much of the misinformation about snakes and to help homeowners effectively reduce opportunities for accidental encounters with these legless reptiles.

Snake Biology

Snakes are ectotherms, meaning that a snake regulates its body temperature by taking heat from or giving off heat to the environment. Because their body temperature is affected by environmental temperatures and varies with surrounding conditions, snakes become inactive during very hot seasons (aestivation) and very cold seasons (hibernation). Snakes may go for several weeks without eating because of frequent periods of inactivity.

Because they are cold-blooded, snakes must rely on behavior to regulate their body temperature. During the hot part of the day, snakes move to shaded areas, and on cool days they sun themselves on rocks or in warm open areas. Snakes often seek out paved roads where they are attracted by the heat from the road surface.

Because snakes have backbones, they are classified in the same group (vertebrates) as fish, mammals, birds, and people. The snake's skeletal system is unique. Snake bones are very light and highly movable. The lower jaws and skull are connected by a piece of stretchy material (ligament). This allows the snake to open its mouth very wide and move each jaw independently. Thus, a snake can swallow prey much larger than its head by "walking" its mouth around the food from side to side in a forward movement.

Snakes are very specialized animals. They do not have legs, ears, or eyelids. There are no "walking" snakes. Often the sex organs of a snake may protrude from the anal plate area and are confused with legs.

They use their forked tongues to smell. The tongue is constantly flicking to pick up airborne particles and odors. Once these aromas are detected, the snake inserts its tongue into two holes in the top of its mouth (Jacobson's organ), where the smells are interpreted by its brain. If the snake detects food and it is hungry, it will pursue the animal.

Contrary to popular belief, snakes are not slimy. In fact, they feel dry to the touch. The snake's scales and skin help keep it from losing moisture from its body. Snakes shed their skin and eye covering together.

When threatened, many snakes produce a unique scent from musk glands located near the anus. Copperbelly water snakes smell like skunks, while rat snakes and copperheads smell like cucumbers.

Soon after the temperatures rise during spring, snakes come out of hibernation and mate. Some snakes lay eggs in a damp, protected area where they will hatch in about two months. Other snakes hatch eggs inside the body. Copperheads, rattlesnakes, cottonmouths, garter snakes,

and water snakes give birth to live young. If you find snake eggs around your home or garden, there is no cause for concern because they were laid by a harmless snake. Once the young have been hatched or born, the parents do not care for their offspring because they are able to take care of themselves.

All snakes are predators, and many are very fussy eaters. Ratsnakes (common in Kentucky) eat rats, mice, and chipmunks. Water snakes feed primarily on dead, diseased, or injured fish. King snakes feed on other snakes, mice, young birds, and bird eggs. Some small snakes, like the rough green snake, eat insects, while others (earth snakes and worm snakes) eat earthworms, slugs, and salamanders. Toads are the favorite food of hognose snakes.

When people encounter a snake, they often corner it. Then the snake will hiss loudly, open its mouth in a threatening manner, coil up, and strike at the individual—or bluff by advancing toward the intruder. These behaviors, designed to scare off the intruder, lead to a common misconception that snakes charge or attack people. In most cases, a snake reacts only if it feels threatened. Usually it crawls away if it can reach cover safely. One exception is the male black racer, which may chase after larger animals, including humans, when it is defending its breeding territory.

There are no "hoop" snakes—a snake cannot reach around and grab its tail to roll away from predators.

Habitat

Snakes like to live in damp, dark, cool places where food is abundant. Likely places around homes to find snakes include:

1. Firewood stacked directly on the ground.
2. Old lumber or junk piles.
3. Gardens and flower beds with heavy mulch.
4. Untrimmed shrubs and shrubs growing next to a foundation.
5. Unmowed and unkept lawns, abandoned lots, and fields with tall vegetation.
6. Pond and stream banks where there is abundant debris or trash.
7. Cluttered basements and attics with a rodent, bird, or bat problem.
8. Feed storage areas in barn hay lofts where rodents may be abundant.

The poisonous snakes in Kentucky have more specialized habitat requirements. Cottonmouths are confined to a

Figure 1 a-d. Maps (Blackened area represents snake habitat)

Western Cottonmouth

Agkistrodon piscivorus

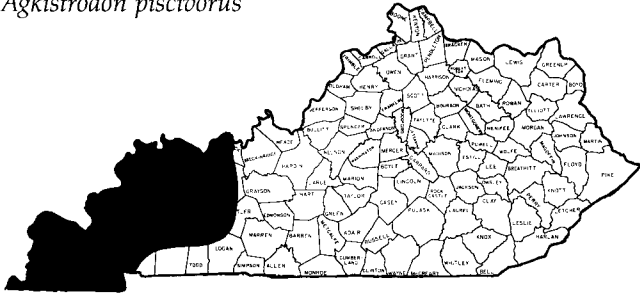


Figure 1a. Range of the Western Cottonmouth in Kentucky

Pygmy Rattlesnake

Sistrurus miliarius

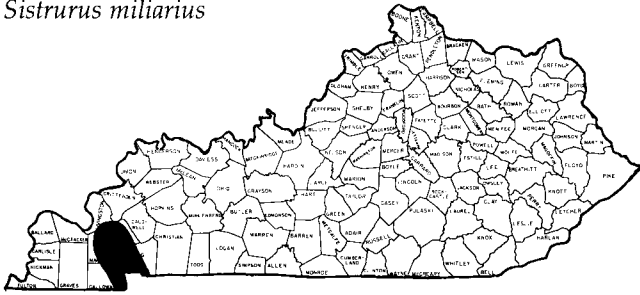


Figure 1b. Range of the Pygmy Rattlesnake in Kentucky

Timber Rattlesnake

Crotalus horridus

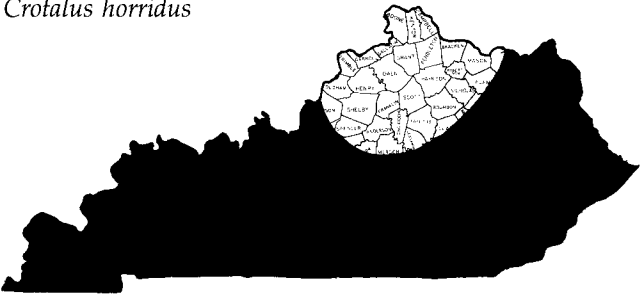


Figure 1c. Range of the Timber Rattlesnake in Kentucky

Northern Copperhead

Agkistrodon contortrix

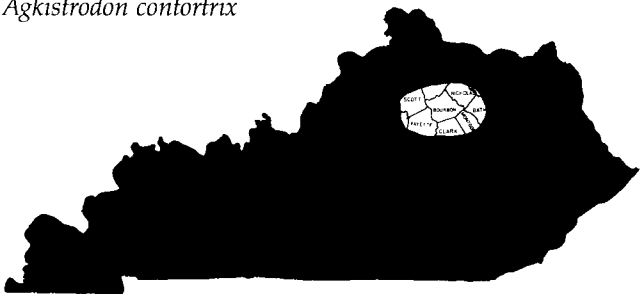


Figure 1d. Range of the Copperhead in Kentucky

few choice wetlands and swamps in western Kentucky (Figure 1a). Cottonmouths may be common in those swamps, such as Murphy's pond, but the number of swamps where they can be found is declining because these wetlands are being converted into agricultural fields.

Pygmy rattlesnakes are rare in Kentucky. These small snakes are sometimes encountered when they cross gravel roads in the evening. Their range is restricted almost entirely to the Land Between the Lakes region (Figure 1b).

Timber rattlesnakes prefer sparsely populated forested areas where there are numerous rock outcroppings, rocky slopes, and boulders. At one time, timber rattlesnakes were common throughout Kentucky. Because humans have disturbed much of this snake's habitat, timber rattlesnakes are becoming uncommon throughout Kentucky and do not occur in the inner Bluegrass region (Figure 1c). Killing a rattlesnake is now an unusual occurrence and is considered front-page news in local newspapers.

Copperheads are the most abundant venomous snakes found in Kentucky. They can be found throughout the commonwealth but are rare to absent in the inner Bluegrass region (Figure 1d). Copperheads prefer to live in hilly forested areas with rocky bluffs and ravines. They can also be found along wooded stream borders, old fields, and meadows where they search for rodents.

Copperheads cause the majority of poisonous snake bites in Kentucky. Their bites are almost never fatal, and fewer than 10 percent of rattlesnake bites are lethal.

Identification of Poisonous Snakes

Because all of Kentucky's poisonous snakes are members of the pit viper family, you can easily tell the difference between poisonous and harmless snakes. **The three ways to distinguish poisonous snakes in Kentucky:**

Pupil shape. The black part in the center of the eye (pupil) of harmless snakes is round. Poisonous snakes have egg-shaped or cat-like (elliptical) pupils (Figure 2a). In good light, you can easily see the pupil shape from a safe distance because snakes cannot jump nor can they strike from more than one-third of their body length.

Pit. Poisonous snakes in Kentucky also have a very conspicuous sensory area or pit (hence the name "pit viper") on each side of the head. The pit looks somewhat like a nostril and helps the snake locate warm-bodied food. It is located about midway and slightly below the eye and nostril (Figure 2a). Harmless snakes do not have pits.

Figure 2. Identifying Poisonous Snakes

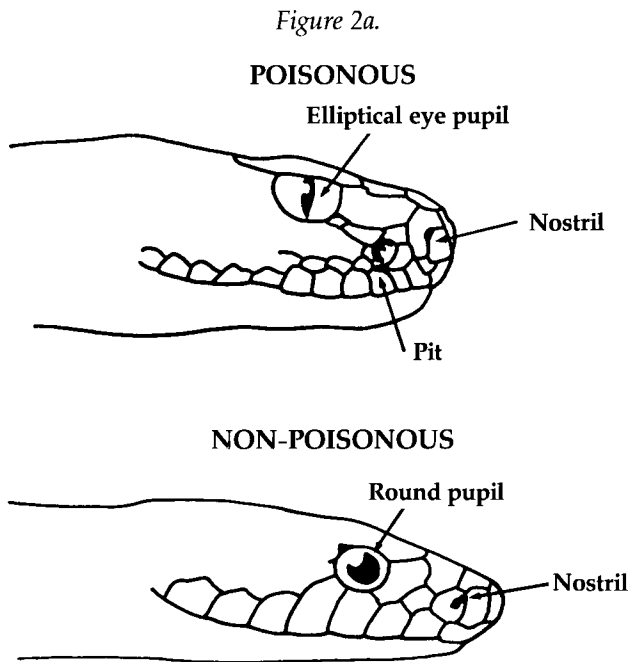
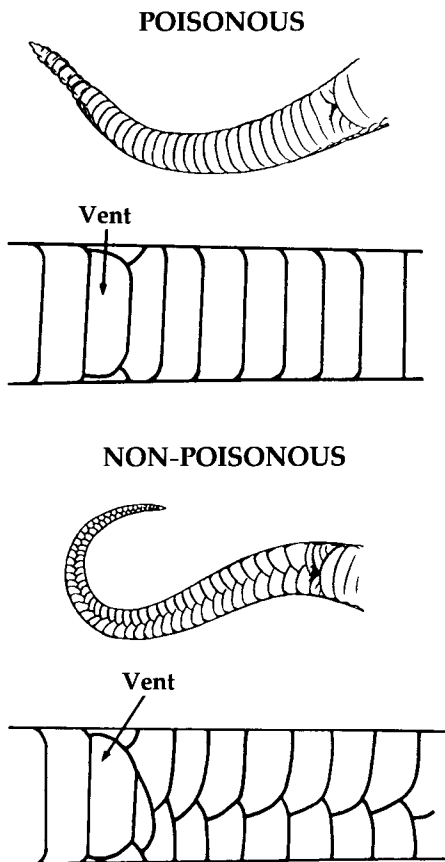


Figure 2b.



Scale arrangement. The underside scales of a venomous snake's tail go all the way across in a single row from the anal plate (Figure 2b). The very tip of the tail may have two scale rows. Nonpoisonous snakes have two rows of scales from the vent to the end of the tail. This characteristic can also be observed on skins that have been shed.

Other features that may help you identify a poisonous snake at a distance:

Head shape. Venomous snakes usually have a triangular (wide at the back and attached to a narrow neck) or "spade-shaped" head. Be aware that many harmless snakes flatten their heads when threatened and may appear poisonous.

Distinctive sound. Rattlesnakes will usually sound a warning rattle (a buzz or a dry, whirring sound) when approached. However, many nonpoisonous snakes (black racers, corn snakes, rat snakes, milk snakes, and pine snakes) and several poisonous snakes (copperhead and cottonmouth) often vibrate their tails when threatened. The sound produced by this vibration often imitates a rattle or hissing sound when the snake is sitting in dry grass or leaves.

Tail. You can easily recognize young cottonmouths and copperheads by their bright yellow or greenish yellow tail.

Beneficial Aspects of Snakes

Before deciding to kill a snake in your yard or garden, consider the many benefits of snakes. Snakes are one of nature's most efficient mousetraps, killing and eating a variety of rodent pests. Although snakes will not eliminate pests, they do help keep their numbers in check. Some harmless snakes (king snakes, milk snakes, and black racers) eat other snakes, including poisonous ones.

Snake venom has been used in developing a variety of human medicines. One type of high blood pressure medicine was developed using information based on chemical secrets contained in snake venom. Researchers are conducting studies using snake poisons in developing treatments for blood and heart problems. Snake venom is also being investigated for controlling some types of harmful bacteria.

Most snakes in Kentucky are not protected by state law. You should obtain a collecting permit from the Kentucky Department of Fish and Wildlife Resources before attempting to catch and keep a snake. Some snakes are quite rare (Kirtland's snake, copperbelly water snake, Northern pine snake, and scarlet snake) and are being reviewed for the federal government's endan-

gered and threatened wildlife list. The state lists several other species as endangered, threatened, or rare. These include the Eastern coachwhip, green water snake, broad-banded water snake, pygmy rattlesnake, western and eastern ribbon snake, western mud snake, and scarlet king snake.

Controlling Snake Problems

No fumigants or poisons are registered for snake control. Various home remedies, including moth balls, sulfur, lime, cayenne pepper, sticky bird repellent, coal tar and creosote, gourd vines, or musk from king snakes, have not proven effective in deterring snakes. There is a snake repellent registered for rattlesnakes and checkered garter snakes. The active ingredients are naphthalene and sulfur. Three field studies have shown it has limited effectiveness for most species. The only efficient method of discouraging snakes is to modify the environment so they find it unattractive.

Habitat Modification

You can modify the environment by removing the snake's shelter (hiding places) and its food source (rodents).

Lawns and fields that are kept clean and closely mowed are less attractive to snakes than are areas of tall grass, weeds, brush, and junk. Remove other hiding places such as old boards lying on the ground, rock and junk piles, and trash piles. Trim shrubs and bushes so limbs hang no lower than 12 inches from the ground.

Stack wood for your fireplace or stove away from your home on a rack (not on the ground) that sits at least 12 inches from the ground.

Cleaning around the yard also removes rodent (favorite snake food) habitat. Other suggestions for reducing a snake's food source include placing garbage in sealed trash cans (not bags) away from the house. If you feed pets outside, keep all dog and cat food cleaned up after each feeding and store feed so it is unavailable to rodents (steel trash can).

To summarize, remove rodents, rodent food and shelter, and all objects that create a damp, cool, dark environment preferred by snakes.

Exclusion

Snakes enter buildings in search of cool, damp, dark areas or places where rodents and insects abound. To prevent these unwanted guests from entering your home,

check the foundation for cracks and openings 1/4 inch or larger. Use mortar for poured concrete, concrete block, or brick foundations. Use 1/8-inch hardware cloth or sheet metal to seal holes and cracks in wooden buildings. Seal cracks and openings around windows, doors, electrical pipes, and wiring with caulk. If you have an open septic or sump pump drain outside, cover the opening with 1/4-inch hardware cloth. Be sure to check it periodically to ensure that the wire does not interfere with drainage.

If you have young children and live in an area where poisonous snakes are common, you may want to invest in a snake-proof fence (Figure 3). Snake-proof fences are expensive to construct, so fencing an entire yard is not practical. However, you can enclose a small area where young children play.

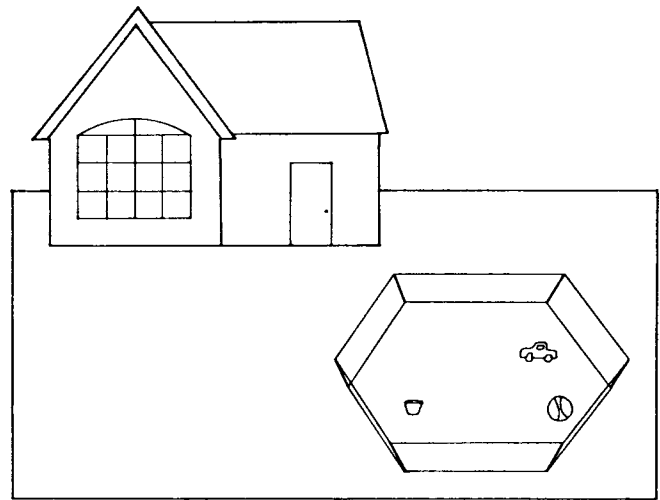


Figure 3. A snake-proof fence can keep snakes from entering a given area.

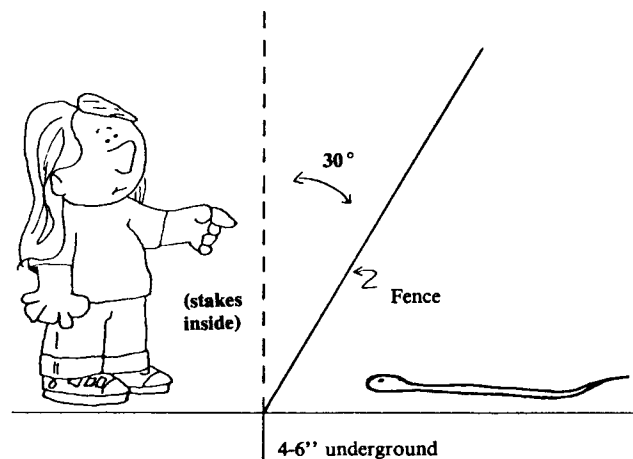


Figure 3a. Side view of a snake-proof fence

Snake-proof fences must be constructed of 1/4-inch hardware cloth at least 36 inches wide. The lower six inches must be buried underground, and the fence should be slanted outward at a 30-degree angle. Supporting stakes need to be placed inside the fence. The fence can be made sturdier by attaching wires from the fence to the stakes. All gates must fit tightly; they should open to the inside because of the outward slope of the fence.

Be sure to keep grass and weeds around the fence mowed closely to the ground to prevent snakes from using them to crawl over the fence.

Removal from inside a Building

Occasionally homeowners will encounter a snake inside the home, usually in a basement or crawl space. Snakes are attracted to these areas by the warmth on cold days and the cool shade on hot days.

You can increase your chances of capturing a snake in the basement by placing rumpled, damp cloths covered by a dry cloth in areas where snakes have been seen. You can then remove the whole works or capture the snakes individually and remove them. If you are not afraid of snakes, the best way to remove them is to sweep them into a bucket or large garbage can with a broom. **NOTE:** Homeowners should exercise extreme caution when moving in a crawl space, especially if venomous snakes have been seen in the area. A face bite could be very serious, and even a face-to-face encounter with a racer or rat snake can be an unpleasant experience.

Another very effective method of capturing snakes inside a home or under porches, crawl spaces, or mobile homes is to use a glueboard. These can be purchased in a variety of places such as agriculture supply or hardware stores. Most small snakes can be captured using a single glueboard placed against a wall and away from pipes or other objects a snake could use for leverage to escape.

A more elaborate arrangement is necessary to capture larger snakes (Figure 4). This type of glue trap can be made at home with purchased glueboards. It is constructed of 1/4-inch plywood cut into 16-by-24-inch sections. Drill a 3/4-inch hole in one corner to allow removal of the board by using a hook on the end of a

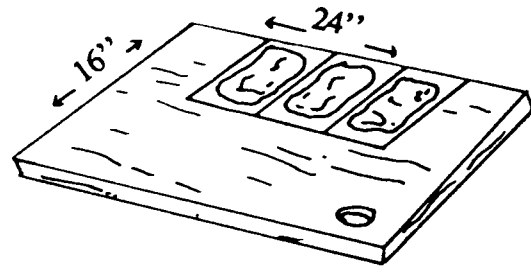


Figure 4. Large glueboard to catch snakes

long stick. Fasten two to four glueboards (or use bulk glue) along one side of the plywood board. This type of trap, when placed against a wall, is capable of capturing snakes up to 5 or 6 feet long.

Glueboards should be used only indoors or under structures where children, pets, or other wildlife cannot reach them. The glue is quite messy and hard to remove. Common cooking oil or vegetable oil can be used to remove animals from the glue. Once the unwanted guests have been removed, be sure to close any holes or entrances so the snakes do not return.

Another option is to use the newly developed snake trap called Snake Guard™. It should be used like a glueboard.

Another method of capturing snakes is to use a drift fence with a large 5-gallon bucket for the trap. Use 6-inch aluminum flashing 10 feet long for each of the wings. Dig a hole large enough to bury the bucket at ground level. Fill the bucket about one-third full with water or ethanol.

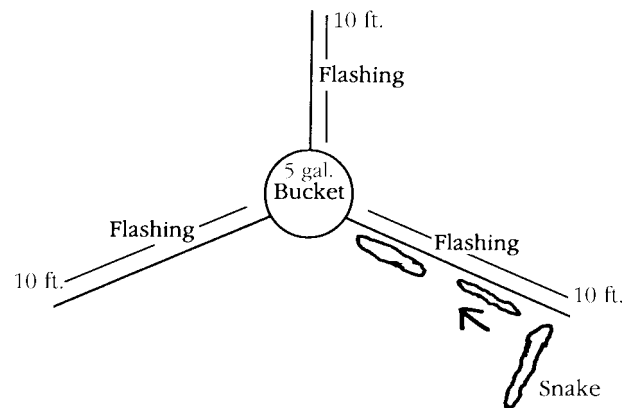


Figure 5. Drift fence

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Remember, snakes are an important part of our natural world. The best approach in managing snake problems, where possible, is to leave these animals alone.