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NONPOISONOUS SNAKES

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NONPOISONOUS SNAKES

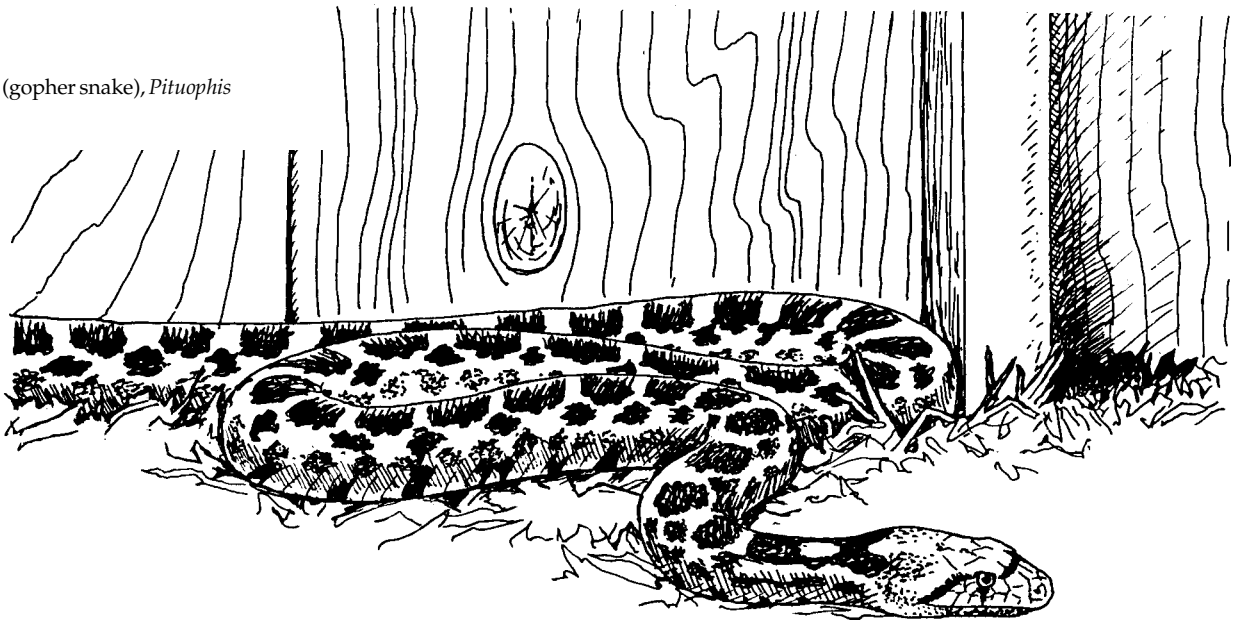


Fig. 1. Bullsnake (gopher snake), *Pituophis melanoleucus*

Damage Prevention and Control Methods

Exclusion

Seal all openings (1/4 inch [0.6 cm] and larger) with mortar, 1/8-inch (0.3-cm) hardware cloth, sheet metal, or steel wool.

A snake-proof fence can be used to exclude snakes.

Habitat Modification

Reduce rodent populations.

Keep all vegetation closely mowed; remove bushes, shrubs, rocks, boards, firewood, and debris lying close to the ground, especially around buildings.

Alter all sites that provide cool, damp, dark habitat for snakes.

Frightening

Not applicable.

Repellents

Several snake repellents have been promoted, but none are consistently effective.

Toxicants

None are registered.

Fumigants

None are registered.

Trapping

A funnel trap with drift fences can be used.

Shooting

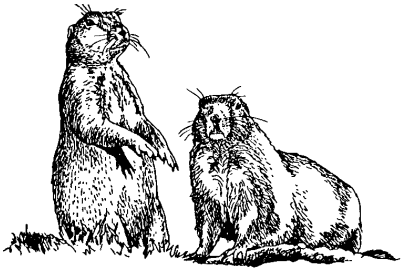
Nonpoisonous snakes are protected by law in most states and indiscriminate killing is illegal. Shooting or clubbing is effective, however, where it is allowed, with permission from the state wildlife agency.

Other Methods

Remove snakes from inside buildings by placing piles of damp burlap bags or towels in areas where snakes have been seen. After snakes have been attracted, remove the bags and snake(s) from the building.

Glue boards can be used to capture snakes found inside houses or other buildings. Once caught, the snake and board can be taken outside. The snake can be released unharmed by pouring vegetable oil on it (the oil counteracts the adhesive).

Since nonpoisonous snakes are completely harmless, control programs for them are not necessary. Learn how to distinguish between poisonous and nonpoisonous snakes in your area.



PREVENTION AND CONTROL OF WILDLIFE DAMAGE — 1994

Cooperative Extension Division
Institute of Agriculture and Natural Resources
University of Nebraska - Lincoln

United States Department of Agriculture
Animal and Plant Health Inspection Service
Animal Damage Control

Great Plains Agricultural Council
Wildlife Committee

Identification

Of the many kinds of snakes found in the United States, only the following are harmful: rattlesnakes, copperheads, cottonmouths, coral snakes, and sea snakes. The latter group lives only in the oceans. All poisonous snakes, except coral snakes and sea snakes, belong in a group called pit vipers. There are three ways to distinguish between pit vipers and nonpoisonous snakes in the United States:

(1) All pit vipers have a deep pit on each side of the head, midway between the eye and the nostril. Nonpoisonous snakes do not have these pits.

(2) On the underside of the tail of pit vipers, scales go all the way across in one row (except on the very tip of the tail, which may have two rows in some cases). On the underside of the tail of all nonpoisonous snakes, scales are in two rows all the way from the vent of the snake to the tip of the tail (Fig. 2). The shed skin of a snake shows the same characteristics.

(3) The pupil of pit vipers is vertically elliptical (egg-shaped). In very bright light, the pupil may be almost a vertical line, due to extreme contraction to shut out light. The pupil of nonpoisonous snakes is perfectly round (Fig. 3).

The poisonous coral snake is ringed with red, yellow, and black, with red and yellow rings touching. Nonpoisonous mimics of the coral snake (such as the scarlet king snake) have red and yellow rings, separated by black rings. A helpful saying to memorize is: "Red on yellow, kill a fellow; red on black, friend of Jack."

Range

Some species of nonpoisonous snakes occur throughout several states, but the majority have only limited ranges.

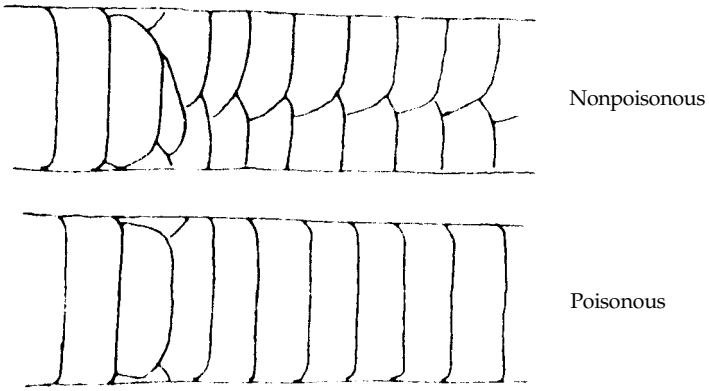


Fig. 2. Nonpoisonous snakes have two rows of scales between the vent and the tip of the tail, while poisonous snakes have only one row.

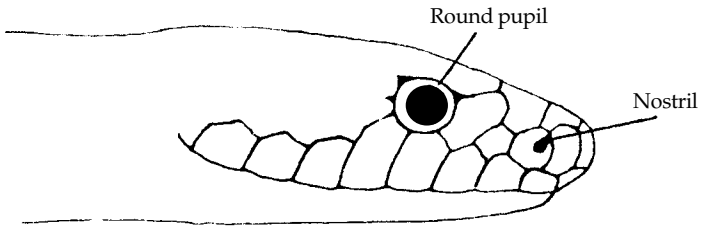


Fig. 3. Nonpoisonous snakes have a round eye pupil and have no pit between the eye and the nostril.

Habitat

Snakes are not very mobile, and even though some are fairly adaptable, most have specific habitat requirements. Some live underground (these are mostly small in size), and some have eyes shielded by scales of the head. Others, such as green snakes, live primarily in trees. One group spends its entire life in the oceans. In general, snakes like cool, damp, dark areas where they can find food. The following are areas around the home that seem to be attractive to snakes: firewood stacked directly on the ground; old lumber piles; junk piles; flower beds with heavy mulch; gardens; unkempt basements; shrubbery growing against foundations; barn lofts—especially where stored feed attracts rodents; attics in houses where there is a rodent or bat problem; stream banks; pond banks where there are boards, innertubes, tires, planks, and other items lying on the bank; unmowed lawns; and abandoned lots and fields.

Food Habits

All snakes are predators, and the different species eat many different kinds of food. Rat snakes eat primarily rodents (such as rats, mice, and chipmunks), bird eggs, and baby birds. King snakes eat other snakes, as well as rodents, young birds, and bird eggs. Some snakes, such as green snakes, eat primarily insects. Some small snakes, such as earth snakes and worm snakes, eat earthworms, slugs, and salamanders. Water snakes eat primarily frogs, fish, and tadpoles.

General Biology, Reproduction, and Behavior

Snakes are specialized animals, having elongated bodies and no legs. They have no ears, externally or internally, and no eyelids, except for a protective window beneath which the eye moves. The organs of the body are elongated. Snakes have a long, forked tongue,

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

The two halves of the lower jaw are not fused, but are connected by a ligament to each other. They are also loosely connected so the snake can swallow food much larger than its head. Because snakes are cold-blooded and not very active, one meal may last them several weeks. Also, because they are cold-blooded, they may hibernate during cold weather months or aestivate during hot summer months when the climate is severe. In either case, they consume little or no food during these times. Some snakes lay eggs, some hatch their eggs inside the body, and some give live birth. The young of copperheads, rattlesnakes, and cottonmouths are born alive.

Nonpoisonous snakes are harmless to humans. In most cases, a snake will crawl away when approached if it feels it can reach cover safely. No snakes charge or attack people, with the exception of the racers, which occasionally bluff by advancing toward an intruder. Racers will retreat rapidly, however, if challenged. Snakes react only when cornered. Different species react in different ways, playing dead by turning over on the back, hissing, opening the mouth in a menacing manner, coiling, and striking and biting if necessary.

Damage and Damage Identification

A nonpoisonous snake bite has no venom and can do no more harm than frighten the victim. After being bitten several thousand times by nonpoisonous snakes, the author and his students have never suffered any adverse reaction, and no treatment was ever used. The only harm nonpoisonous snakes can cause is frightening people who are not familiar with them. A bite from a poisonous snake, however, causes an almost immediate reaction—swelling, tissue turning a dark blue-black, a tingling sensation, and nausea. If none of these is observed or felt, the bite was from a nonpoisonous snake. Also, bites from one of the pit vipers (copperheads, rattlesnakes, and cottonmouths) will reveal two fang marks, in addition to teeth marks. All snakes have teeth; only pit vipers have fangs. North American pit vipers have only two rows of teeth on top and two on the bottom, whereas nonpoisonous snakes have four on top and four on the bottom.

Legal Status

In most states, snakes are considered nongame wildlife and are protected by state law unless they are about to cause personal or property damage. Therefore, snakes should not be indiscriminately killed. Some species are listed on federal and/or state threatened and endangered species lists.

Damage Prevention and Control Methods

Exclusion

Snakes enter houses, barns and other buildings when habitat conditions are suitable inside the buildings. They are particularly attracted to rodents and insects as well as cool, damp, dark areas often associated with buildings. All openings 1/4 inch (0.6 cm) and larger should be sealed to exclude snakes. Check the corners of doors and windows, as well as around water pipe and electrical service entrances. Holes in masonry foundations (poured concrete and concrete blocks or bricks) should be sealed with mortar to exclude snakes. Holes in wooden buildings can be sealed with fine mesh (1/8-inch [0.3-cm]) hardware cloth or sheet metal.

In some cases, the homeowner may get peace of mind by constructing a snake-proof fence around the home or yard (Fig. 4). A properly constructed snake-proof fence will keep out all poisonous snakes and most harmless snakes (some nonpoisonous snakes are fairly good climbers). The cost of fencing a whole yard may be high, but it costs little to enclose a play space for children too young to recognize dangerous snakes. The following design is taken from information from the US Fish and Wildlife Service.

The fence should be made of heavy galvanized hardware cloth, 36 inches (91 cm) wide with a 1/4-inch (0.6-cm) mesh. The lower edge should be buried 6 inches (15 cm) in the ground, and the fence should be slanted outward from the bottom to the top at a 30° angle (Fig. 5). Place supporting stakes inside the fence and make sure that any gate is tightly fitted. Gates should swing inward because of the outward slope of the fence. A 36-inch (91-cm) vertical fence with a 12-inch (30-cm) lip at the top, facing outside and angled downward at a 30° angle would probably work as well. Any opening under the fence should be firmly filled—concrete is preferable. Mow all vegetation just outside the fence, for snakes might

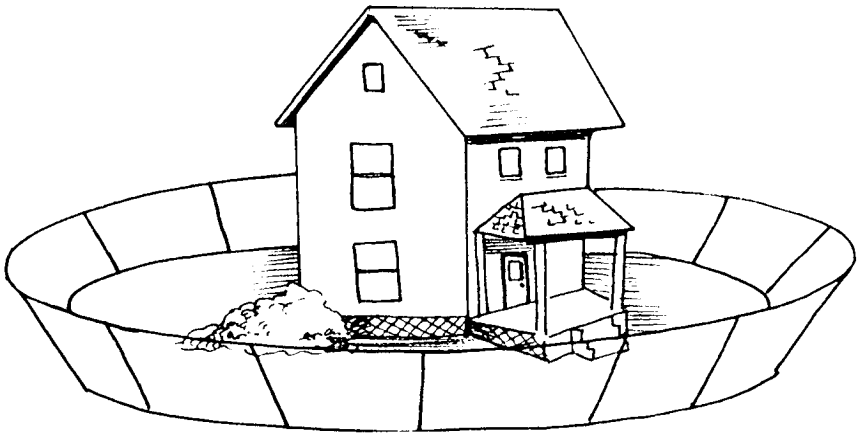


Fig. 4. Though fairly expensive, a properly constructed snake-proof fence can keep snakes from entering a given area.

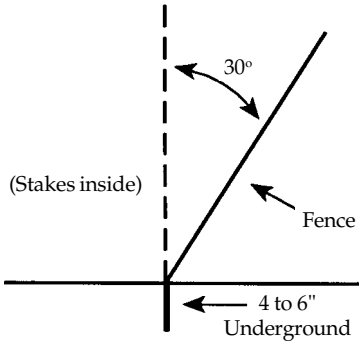


Fig. 5. Side view of a drift fence to exclude snakes.

use these plants to help climb over the fence. If children tend to crush the fence, it must be supported by more and sturdier stakes and by strong wire connected to its upper edge.

Habitat Modification

The primary food of most snakes, especially the larger ones, is birds, bird eggs, and rodents such as rats, mice, and chipmunks. No control program for rodent-eating snakes is ever complete without removing rodents and rodent habitats. Put all possible sources of rodent food in secure containers. Be sure to keep all dog or cat food cleaned up after each feeding and make the stored food unavailable to the rodents. Keep all vegetation closely mowed around buildings. Remove bushes, shrubs, rocks, boards, and debris of any kind lying close to the ground, as these provide cover for both rodents and snakes. Refer to the chapters on rodents for more information on their control.

Frightening

Not applicable.

Repellents

Several repellents have been used in the past, but none has been consistently effective. Currently Dr. T's™ Snake-A-Way® is registered for the control of rattlesnakes and the checkered garter snake, but is apparently not effective against most species of snakes. Active ingredients include sulfur and naphthalene. Band applications around the area to be protected are recommended.

Toxicants

None are registered.

Fumigants

There are no legal fumigants to kill snakes. Moreover, because most snakes do not burrow, using fumigants in underground burrows is not a feasible method of control. In the past, pest control operators have completely encased houses with plastic and fumigated at tremendous expense to the homeowner (several thousand dollars). This is not a reasonable control method for nonpoisonous snakes since the animals being killed are completely harmless.

Trapping

One method reported by researchers to catch snakes involves a funnel trap with drift fences constructed of 1/4-inch or 1/2-inch (0.6- or 1.3-cm) mesh hardware cloth erected 2 feet (0.6 m) high and 25 feet (7.5 m) long. Posts for drift fences should be on the back side of the fence. These fences guide animals into the funnel end of the trap (Fig. 6).

One type of funnel trap can be made by rolling a 3 x 4-foot (0.9 x 1.2-m) piece of 1/4-inch (0.6-cm) mesh hardware cloth into a cylinder about 1 foot (0.3 m) in diameter and 4 feet (1.2 m) long. An entrance funnel can be made similarly and fitted into one end of the cylinder. Close the other end of the cylinder with hardware cloth and attach the drift fence. To catch the animal from either direction, put another funnel at the other end of the trap and another drift fence facing the opposite direction.

Shooting

Nonpoisonous snakes are protected by law in most states, and indiscriminate killing is illegal. Shooting or clubbing is extremely effective in states where it is allowed and will soon eliminate the snake population. Permission may be required from the local state wildlife agency.

Other Methods

It is not difficult to remove snakes from inside a house or other buildings. Place piles of damp burlap bags or towels in areas where snakes have been seen or are likely to be found. Cover each pile with a dry burlap bag or towel to slow evaporation. Snakes are attracted to damp, cool, dark areas such as these piles. After the bags or towels have been out for a couple of weeks, completely remove them with a large scoop shovel during the middle of the day when snakes are likely to be inside or underneath.

Glue boards have proven to be useful for trapping snakes in or under buildings. Securely tack several rodent glue traps (or use bulk glue) to a plywood board approximately 24 x 16 inches

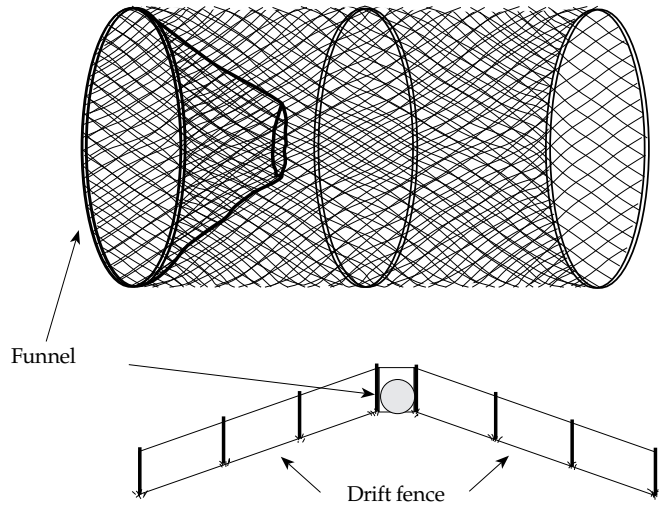


Fig. 6. A funnel trap with a drift fence is one way to catch snakes.

(61 x 41 cm) to make a glue patch at least 7 x 12 inches (15 to 30 cm). Place the board against a wall where snakes are likely to travel. Snakes become stuck when they try to cross the board. Do not place the board near any object (pipes or beams) that the snake can use for leverage in attempting to free itself. A hole drilled through the plywood board will allow removal of the board and the entrapped snake with a long stick or hooked pole. Animals trapped in the glue can be removed with the aid of vegetable oil, which counteracts the adhesive.

Do not use glue boards outdoors or in any location where they are likely to catch pets or nontarget wildlife. The glue can be quite messy and is hard to remove from animals.

Economics of Damage and Control

As mentioned earlier, nonpoisonous snakes are completely harmless and cause no damage, except occasionally frightening people. Therefore, no expense toward control of non-poisonous snakes is justified. Most methods to remove snakes are inexpensive, except for the snake-proof fence, which can be quite expensive.

Acknowledgments

Appreciation is expressed to the US Fish and Wildlife Service for some of the information presented in this chapter, particularly the design of the snake-proof fence.

Figures 1 through 3 by Emily Oseas Routman.

Figures 4 through 6 by Jill Sack Johnson.

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