

Identifying Venomous and Nonvenomous Snakes in Texas

Dr. Maureen Frank, Assistant Professor and Extension Wildlife Specialist

Most snakes in Texas are not harmful to humans. In fact, snakes benefit people by eating rodents and insects, thus providing free, all-natural pest control. However, some snakes are venomous, meaning that their bite can cause severe injury or death if untreated. Learning to distinguish between venomous and non-venomous snakes will help you stay safe when you encounter a snake. Knowing how to identify snakes is also important because several nonvenomous species and one venomous species are protected by state law, meaning it is illegal to harm them.



Photo 1. Garter snakes (*Thamnophis* spp.) are common throughout Texas. They are not venomous and provide pest control in gardens by eating slugs and insects.

Is this snake venomous?

There is no single characteristic shared by all venomous snakes in Texas. Instead, you should learn to identify the species that live in your area. The following descriptions will help you learn some basic identification tips to help you recognize local venomous snakes. For additional information, consult a field guide.

There are two broad categories of venomous snakes in Texas: pit vipers and coral snakes.

Pit vipers

All pit vipers have an opening, called a pit, on each side of the head between the eye and nostril. However, this feature can be difficult to see from a safe distance. Pit vipers also have venom glands on the sides of their heads, giving the head a triangular appearance. There are three types of pit vipers in Texas: rattlesnakes, copperheads, and cottonmouths.

Rattlesnakes

There are several species of rattlesnakes in Texas, with varying colors and patterns, but distinguishing rattlesnakes from other snakes is relatively easy, because they are the only snakes with rattles at the end of their tails. When threatened, a rattlesnake will vibrate the end of its tail to make a distinct warning sound. Rattlesnakes are adapted to a variety of habitats, including forests, rangeland, prairies, and developed land, and can be found throughout Texas.



Photo 2. The most widespread rattlesnake in Texas is the western diamondback rattlesnake (*Crotalus atrox*). Note the rattle on the tip of the tail, which is coiled to the center of the snake in this picture.



Photo 3. The timber (canebrake) rattlesnake (*Crotalus horridus*) is a threatened species in Texas and therefore illegal to harm or kill. They can be found throughout eastern Texas. Note the orangish-tan dorsal stripe overlain by black bands. On this individual, the bands do not continue down the sides and appear as chevrons.



Photo 4. Prairie rattlesnakes (*Crotalus viridis*) occur across western Texas in arid grasslands and canyons. Their blotched pattern is similar to that of a western diamondback rattlesnake, but their tails are a solid dark color, instead of contrasting black and white.

Rattlesnake fact check: aging

Can you tell the age of a rattlesnake from the number of segments on its tail? These segments, sometimes called buttons, are *not* an indication of the age of the snake! A new segment is added each time the snake sheds its skin. Depending on species, age, and environment, a rattlesnake may shed several times in one year. Furthermore, as a rattle becomes particularly long (8-10 segments), some segments may break. Therefore, it is impossible to know the age of a rattlesnake by looking at its tail.

Copperhead

The broad, alternating dark-and-light bands of copperheads (*Agkistrodon contortix*) look different from the patterns on other snakes, resembling an hourglass when viewed from above, with the thin section of the hourglass over the top of the back. There are three different subspecies of copperheads in Texas, so the exact coloration of these bands may vary. The body shape of copperheads is similar to rattlesnakes, but they lack rattles and have thicker bodies. Copperheads are typically found in forested areas, including wooded suburbs. Their range covers most of Texas, with the exception of far south Texas, the panhandle, and the northwest portion of the Trans-Pecos.



Photo 5. Alternating dark and light bands encircle the body of a copperhead.

Cottonmouth

Suitable habitat is important for cottonmouths (*Agkistrodon piscivorus*), which are also called water moccasins because they are found in and near water. Cottonmouths have wide bodies like copperheads, but are a dark brown color with dark patterning. On some individuals, the pattern may be difficult to see. Their appearance is similar to some species of nonvenomous water snakes (see 'Similar snakes' section), but note the difference in head shape. When threatened, a cottonmouth may open its mouth to show the white interior for which it is named. Cottonmouths are found in east Texas, along the Gulf Coast, and in the Hill Country.



Photo 6. Some cottonmouths are patternless or have patterning very similar to their background color.



Photo 7. This cottonmouth is a darker color, but some patterning can be seen midway down its body. Note the triangular head and narrow neck.

Coral snakes

Only one species of coral snake, the Texas coral snake (*Micrurus tener*), lives in Texas. These snakes have a very different appearance from pit vipers, with slender bodies, small heads, and alternating rings of bright red, yellow, and black. Texas coral snakes are typically less aggressive than pit vipers, but have extremely potent venom. They are usually found in forested habitats, including wooded suburbs. Texas coral snakes are similar in appearance to some nonvenomous snakes, but the order of the colored rings can be used to distinguish them. “Red touch yellow, kill a fellow” can help you remember that if red and yellow rings of color are together on a snake, it is a Texas coral snake. Another way to remember the warning coloration is to think of a stoplight, where yellow means caution and red means stop. If red and yellow touch, take caution and stop, don’t touch the snake! Texas coral snakes are found throughout most of the state except the panhandle and Trans-Pecos.

Snakes around the world

The “red touch yellow” rhyme is a useful way to remember that Texas coral snakes are dangerous, while other brightly colored snakes, such as milk snakes, are nonvenomous. However, travelers should be aware that this rhyme only works in the United States. Other species of coral snakes can be found in Mexico, Central America, and South America, and some of these have red rings that touch white rings, or even red rings that touch black rings. When traveling outside of the United States, avoid contact with any snake that you cannot positively identify as nonvenomous, and remember that even many nonvenomous snakes can deliver severe and painful bites.



Photo 8. The bright coloration of Texas coral snakes helps distinguish them from other snakes. Some nonvenomous snakes also have bright rings of color, but the red and yellow rings on a coral snake are side-by-side.

Types of teeth

Coral snakes belong to the same family as cobras. All snakes in this family have fixed, hollow fangs. In contrast, pit vipers (rattlesnakes, copperheads, and cottonmouths) have fangs that are hollow but can rotate forward to deliver a bite. Nonvenomous snakes lack specialized teeth, and all snakes have small rear-facing teeth to help the snake grasp and consume prey.

The rectangular head of a coral snake may lead some people to assume that it is not venomous, especially because coral snakes do not typically strike or behave aggressively. However, they are likely to bite when handled, and may chew on the bite site to deliver more venom. As with any venomous snake, a bite from a coral snake should be treated immediately by a medical professional.

Similar snakes

Bull snake

A bull snake (*Pituophis catenifer*) may coil up like a rattlesnake, vibrate its tail, flare the sides of its head, and make a raspy hiss that sounds like a rattlesnake's rattle. They can be aggressive and may strike and bite, but do not have any venom. Distinguishing a bull snake from a rattlesnake is easier when the snake is not coiled. Bull snakes have more slender bodies than rattlesnakes and have rectangular, instead of triangular, heads. Regardless of the snake's posture, look at the tail for identification: instead of a dark or black-and-white banded tail tipped with rattles, bull snakes have pointed, yellow-tan tails with reddish bands and no rattles. Bull snakes are sometimes called gopher snakes. They are found throughout west Texas.



Photo 9. A coiled bull snake can look and even sound like a rattlesnake but does not have venom glands or rattles.



Photo 10. Bull snakes can flare the sides of their heads to mimic the triangular shape of a pit viper's head.



Photo 11. Unlike rattlesnakes, bull snakes have round pupils. Also note the yellow-tan tail with reddish-brown bands that lacks a rattle.

Hog-nosed snakes

Like bull snakes, a hog-nosed snake (*Heterodon* spp.) will mimic a rattlesnake by coiling its body and flaring the sides of its head. Hog-nosed snakes do not have venom glands, nor do they have rattles. Look for the upturned scale at the end of a hog-nosed snake's nose, which is a feature rattlesnakes lack. When especially stressed, hog-nosed snakes will play dead by flipping upside down, sometimes vomiting or defecating to add to the effect. The range of hog-nosed snakes covers most of Texas.



Photo 12. Look at the tip of the head and the tip of the tail to tell a hog-nosed snake from a rattlesnake: a hog-nosed snake has an upturned scale on its nose and lacks a rattle.



Photo 13. Close-up of the upturned scale on the nose of a hog-nosed snake. Also notice the round pupils.

Water snakes

As their name suggests, water snakes spend much of their time in and around water, similar to the behavior of cottonmouths. A few species of water snakes also resemble cottonmouths. Diamond-backed



Photo 14. All water snakes have round pupils and dark vertical lines on the bottom jaw.

water snakes (*Nerodia rhombifer*) have dark patterns on a tan or brown background, and some subspecies of plain-bellied water snakes (*Nerodia erythrogaster*) have brown bodies with or without noticeable bands. Banded and unbanded plain-bellied water snakes may resemble cottonmouths, which can have patterning or be patternless. As their name implies, though, plain-bellied water snakes lack patterning on their undersides, which may be pale to bright yellow. For all water snakes, a good distinguishing feature is the dark vertical lines that span the lower jaw.

Water snakes can flatten their heads when threatened, but their necks are not easily distinguished from their bodies in that posture. In contrast, cottonmouths have a wide head but narrow neck. If the snake is observed in the water, note that a cottonmouth will usually hold its head high and most of its body will be above the surface of the water. On the other hand, most of the body of a water snake will usually be just below the surface of the water. Although water snakes are not venomous, they can deliver a strong, painful bite. Water snakes occur in suitable habitat throughout most of Texas.



Photo 15. Note the round pupils, vertical lines on the bottom jaw, and yellow belly of this nonvenomous plain-bellied water snake.



Photo 16. Broad-banded water snakes (*Nerodia fasciata*) are found in eastern Texas. Although some specimens have obvious, contrasting bands that clearly distinguish them from cottonmouths, others have discrete markings. Despite this individual's muted patterns and flared head, note its round pupils and lines on the lower jaw.

Protected species: Texas indigo snake (*Drymarchon melanurus*)

All species designated as Threatened or Endangered, whether federally or state listed, may not be harmed. The Texas indigo snake is one of 10 such protected snake species.

As their name indicates, Texas indigo snakes are a shiny dark blue in color, with silver-brown mottling or bands on the front half of the body. They are large snakes, with an average length of 5-6 feet and thick, heavy bodies. The largest individuals may reach lengths over 8 feet. Although they will sometimes make a rattling hiss when threatened, Texas indigo snakes are typically not aggressive and their coloration does not resemble any venomous snakes found in the state.



Photo 17

While the prey of indigo snakes includes typical snake food like rodents, they will also consume rattlesnakes. Texas indigo snakes are found in south Texas, in brushy habitat near a water source.

Scarlet and milk snakes

The range of scarlet snakes (*Cemophora coccinea*) in Texas is fairly small compared to that of coral snakes, limited to a few counties in the northeast and along the south Gulf Coast. Milk snakes (*Lampropeltis triangulum*) have a similar range to coral snakes. Scarlet and milk snakes look similar, with bold red, black, and pale bands that might be confused with the striking pattern of a coral snake. However, the red bands on both of these nonvenomous species touch the black bands. Often, the pale bands are white, cream, or pale yellow, instead of the bright yellow of a coral snake. On scarlet snakes, the red and black bands do not continue all the way around the snake, and the white of the belly is visible. However, the red bands on both of these nonvenomous species touch the black bands. Often, the pale bands are white, cream, or pale yellow, instead of the bright yellow of a coral snake. On scarlet snakes, the red and black bands do not continue all the way around the snake, and the white of the belly is visible.



Photo 18. Red always touches black on a scarlet snake, and the red and black coloration do not continue onto the belly.



Photo 19. On a milk snake, the red bands always touch black.

Safety

Snakes try to avoid contact with humans and will only bite when they feel threatened. If you encounter a venomous snake, stay calm and back away slowly. The snake will not chase you and may try to find an escape route. You might hear a rattlesnake's rattle before seeing the snake. In that case, stop moving until you can locate the snake. It is possible that you walked past the snake before it alerted you, so don't step backward until you look.

When you are working outside, watch where you step and reach. Use a stick or long-handled tool to move boards or logs rather than reaching underneath. Tall, thick boots are a good idea when you will be in areas that are likely to have snakes. Snake chaps or snake boots can be purchased for even better protection. Rattlesnakes will often use prickly pear cactus as shelter, especially if there is a wood rat (*Neotoma* spp.) nest in the cactus. If you are going to burn a cactus, sweep the bottom of the plant first to scare any snakes away from you.

Do not attempt to kill snakes that you find outside. You are more likely to be injured while killing a venomous snake than if you leave the snake alone, and snakes play a valuable role in the environment by keeping rodent populations low.

First Aid

There are many “home remedy” snakebite treatments that are not helpful and may actually be more harmful to the victim than doing nothing. Anyone who has been bitten by a venomous snake should immediately be taken to an emergency care facility (hospital emergency room or clinic). If possible, and only if it can be done safely, try to identify the snake so you can inform the doctor, who in turn can more quickly provide the correct antivenin. Other than that, there are very few things you should do for a snakebite victim. Keep the victim calm and reduce their physical exertion as much as possible. Have the victim remove all jewelry (rings, bracelets, watches) or restrictive clothing near the site of the bite so that these items do not restrict blood flow if swelling occurs. Do not apply ice to the bite or make a tourniquet, and do not make any incision on or near the bite. All of these “treatments” may harm the victim.

As with most first aid, the best thing to do is be prepared long before an incident occurs. Know the area where you will be hiking or working, and take appropriate safety precautions. Learn the location of the nearest emergency facility and keep the number for that facility readily available. The best treatment for a snakebite victim is that given by a doctor.

A bite from a nonvenomous snake should be treated like a puncture would. Wash the area well, apply pressure if there is bleeding, and keep the area clean while the wound heals. If signs of infection develop, such as redness, swelling, or pain, seek medical care.

Dry bites

Snakes do not always inject venom when they bite. A bite from a venomous snake that does not inject venom is often referred to as a “dry bite.” Dry bites can be fairly common in some species, but do not try to determine whether venom was injected and **do not wait** for symptoms to start before seeking treatment. If you know or suspect that the snake was venomous, seek treatment immediately for any bite. Symptoms may not arise for hours, and at that point treatment may be less effective.



Photo 20. Red bands touch black bands on a milk snake.

Photo Credits

Photo 1. Maureen Frank, Texas A&M AgriLife Extension Service.

Photo 2. Maureen Frank, Texas A&M AgriLife Extension Service.

Photo 3. "Timber Rattlesnake (*Crotalus tigris*)" by Peter Paplanus, used under CC BY 2.0.

Photo 4. "Prairie Rattlesnake" by Andrew DuBois, used under CC BY-NC 2.0.

Photo 5. Maureen Frank, Texas A&M AgriLife Extension Service.

Photo 6. "Western Cottonmouth Snake" by USFWS Midwest Region, used under CC BY 2.0.

Photo 7. "Western Cottonmouth" by Waldgeweiht, used under CC BY-NC-ND 2.0.

Photo 8. "Letting go" by Julia Gregory, used under CC BY-NC 2.0.

Photo 9. "Bull snake a.k.a. the Deigo (*Pituophis catenifer sayi*)" by Dallas Krentzel, used under CC BY 2.0.

Photo 10. "bull snake" by BLMIdaho, used under CC BY 2.0.

Photo 11. "Belted Snake (*Coluber constrictor*)" by squamatologist, used under CC BY-NC-ND 2.0.

Photo 12. "Dusty Hognose Snake (*Amphispeltis*)" by Peter Paplanus, used under CC BY 2.0.

Photo 13. "Dusty Hognose Snake (*Amphispeltis*)" by Peter Paplanus, used under CC BY 2.0.

Photo 14. "Diamondback Water Snake (*Nerodia sipedon*)" by Peter Paplanus, used under CC BY 2.0.

Photo 15. "Yellow-bellied Watersnake" by Natalie McNear, used under CC BY-NC 2.0.

Photo 16. "Broad-banded Water Snake, (*Nerodia sipedon*)" by J. Maughn, used under CC BY-NC 2.0.

Photo 17. "Texas Indigo Snake" by Tom Benson, used under CC BY-NC-ND 2.0.

Photo 18. "Northern Scarlet Snake, SE Georgia, USA" by tom spinker, used under CC BY-NC-ND 2.0.

Photo 19. Maureen Frank, Texas A&M AgriLife Extension Service.

Photo 20. Maureen Frank, Texas A&M AgriLife Extension Service.

For more resources on snakes and other wildlife, contact your local County Extension office.

Texas A&M AgriLife Extension Service

AgriLifeExtension.tamu.edu

More Extension publications can be found at *AgriLifeBookstore.org*

Texas A&M AgriLife Extension provides equal opportunities in its programs and employment to all persons, regardless of race, color, sex, religion, national origin, disability, age, genetic information, veteran status, sexual orientation, or gender identity.

The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating.