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POISONOUS SNAKES AND SNAKEBITE IN NEBRASKA

Ron J. Johnson, Extension Wildlife Specialist

Online @ <http://snrs.unl.edu/herpneb/snake/PoisonSnakes1.html>

Nebraska has four kinds of poisonous snakes -- the prairie rattlesnake, timber rattlesnake, western massasauga (a small rattlesnake), and copperhead. The prairie rattlesnake is found in the western two-thirds of Nebraska and the other three in the southeastern corner. The poisonous coral snake and the cottonmouth or "water moccasin" do not occur in Nebraska.

Many Nebraskans enjoy outdoor recreational activities such as hiking, hunting, fishing, and camping, and farmers and ranchers often check fields by walking. Some understanding of poisonous snakes allows enjoyment of outdoor activities without undue fear of snakes.

This NebGuide provides information about Nebraska's poisonous snakes, some guidelines for avoiding snakebite, and suggestions on what to do in case of snakebite. Another NebGuide on snakes, "Controlling Snake Problems Around Homes," is also available.

Recognizing Poisonous Snakes

Knowing how to identify poisonous snakes, especially the kinds found in areas where you might go, is a good first step in avoiding them. Consider purchasing a good field guide and consulting books in libraries to help sharpen your skills. You can also use the [Kwik-Key](#) guide to Nebraska Snakes. Another good way to learn about snakes and how to identify them is to view them at local zoos and nature centers. Here are some features that may help you recognize Nebraska's four poisonous snakes. [The Kwik-Key guide is online @ <http://snrs.unl.edu/herpneb/snake/basicsnakekey.html>]

At a distance, be alert for ...

1) A blotched or banded body pattern. Several nonpoisonous snakes are also blotched or banded, but all snakes in Nebraska that have lengthwise stripes are nonpoisonous. Although the timber rattlesnake may have a single rusty stripe down the center of the back, it is clearly a blotched snake much different from striped garter snakes.

2) A triangular head distinctly wider than the neck. However, several other snakes, including garter snakes, hognose snakes, and bullsnakes may also display this characteristic, especially when alarmed.

3) A warning rattle - a buzz or dry whirring sound. Rattlesnakes usually, but not always, sound a warning rattle when nearby. The presence of rattles or a "button" (first rattle) at the end of the tail also serve as identifying features. Some nonpoisonous snakes, including bullsnakes and rat snakes, vibrate their tails rapidly when alarmed; in dry vegetation this may sound like a warning rattle.

On dead or caged snakes ... (CAUTION: even dead snakes can bite by reflex)

4) In daylight, Elliptical (cat-like) eye pupils (the black center portion of the eye) (Fig. 1). Nebraska's nonpoisonous snakes have round eye pupils. Eye pupil shape (elliptical or round) may be visible from a distance on live snakes observed in good light.

5) A small pit on each side of the head between and slightly below the eye and nostril (Fig. 1). This small pit, which looks somewhat like another nostril, is heat sensitive and helps the snake locate warm-bodied prey such as mice. Snakes with this pit are called pit vipers and all of Nebraska's poisonous snakes are in this group. In fact, the only snake in the United States that is poisonous but not a pit viper is the coral snake, found far south of Nebraska in the southern states.

6) Scales on the underside of the tail that go all the way across in a single row (Fig. 1), except for the very tip, which may have two rows. On nonpoisonous snakes, these scales are in two rows from the vent all the way to the end of the tail. This characteristic also shows on shed snake skins.

Nebraska's Poisonous Snakes



Prairie rattlesnake (*Crotalus viridis*). As the name indicates, this rattlesnake lives in grassland areas of the Great Plains including the western two-thirds of Nebraska (Fig. 2). They are moderate in size, about 35-45 inches long, and olive, greenish-gray, or greenish-brown in color with brownish blotches down the back. The blotches, outlined with a thin white line, become more narrow crossbands on the tail. The head has two light slanting lines, with the top line above the corner of the mouth. Young are born in late summer to early fall, are about 8 to 12 inches long, and number from 4 to 20 in a litter. Prairie rattlesnakes prefer habitats such as prairies, pastures, prairie dog towns, and rock outcroppings. In winter, they den together in sites that don't freeze such as deep rock crevices or burrows of other animals. Their food is mostly small mammals such as small rabbits, kangaroo rats, young prairie dogs, and other rodents. Young eat mice and lizards. Prairie rattlesnakes are often active in the daytime.



Timber rattlesnake (*Crotalus horridus*). The timber rattlesnake is a species of the eastern United States but its range extends into the wooded areas of southeastern Nebraska (Fig. 3). Adults are fairly large, commonly 45 to 55 inches long, and heavy-bodied. Their color is yellowish brown to dark brown or gray, with dark blotches down the back that become crossbands toward the tail. The blotches are somewhat jagged or "V"-shaped and have yellowish edges. There may be a single reddish stripe down the middle of the back. The head is usually unmarked and the tail, in adults, is black, giving rise to the name "velvet-tail rattler." Young are born in late summer to early fall, are about 10 to 14 inches long and number from 5 to 20 in a litter. Timber rattlesnakes prefer forested areas with rock outcroppings or rock ledges but may venture into adjacent sites. Rocky ledges with southern exposures are favorite sunning spots in spring and fall, a place not to climb unless you can see where you'll place your hands. Such rocky areas also provide den sites where they hibernate in groups, sometimes with other kinds of snakes. Timber rattlesnakes eat mostly rodents and other small animals that are common in second-growth woodlands. They may be active at night or during the day, in part depending on when the temperature is most suitable. Timber rattlesnakes are generally mild-mannered and prefer to avoid people. They may try to retreat when approached or lie motionless, depending on natural camouflage for concealment.



Western massasauga (*Sistrurus catenatus*). This is a small rattlesnake, about 20 to 30 inches long, with dark, somewhat round, blotches down the back and other smaller and less distinct blotches on the sides (Fig.4). The ground color is light gray or tan-gray and the belly light with brown or black mottling. The head has nine large scales on top, unlike other rattlesnakes that have many small scales on top of the head. Young are born in mid to late summer, are about 7 to 9 inches long at birth, and number from 2 to 19 in a litter. Massasaugas are found in prairie or grassland areas often in marshy sites or on rock outcroppings where these are available. The name massasauga is a Native American term meaning "swamp dweller," referring to its use of marshy or wet habitat areas. Massasaugas eat mostly small rodents and shrews, plus some frogs, lizards, birds, and other small snakes. When approached, these snakes may remain silent and try to retreat, but if aroused or picked up, they bite quite readily.



Copperhead (*Agkistrodon contortrix*). Copperheads are stout-bodied snakes, appropriately named because of the coppery top of the head. In Nebraska, they are known to occur only in southern Gage and Richardson Counties, but they may also occur along the Missouri River bluffs south of the Platte River (Fig. 5). They are copper to tan or chestnut in color with darker chestnut or reddish-brown "hourglass" shaped crossbands. The dark bands are narrow in the middle of the back and wider on the sides, thus the hourglass shape. The belly has variable gray to black markings. Young are born in late summer to early fall, about 8 to 10 inches long and from 2 to 15 in a litter. Young have a yellow-tipped tail, which, when twitched is thought to lure small food items such as insects within range. Copperheads prefer wooded areas with rocky outcrops, but use a variety of other habitats such as abandoned sawdust or wood piles, abandoned farm buildings, and grassy areas with rotting logs or debris for cover. In fall, they gather to hibernate, often on rocky forested hillsides with southern or eastern exposures. Their winter den is sometimes shared with other kinds of snakes. Copperheads eat mostly mice but also take lizards, frogs, large caterpillars, and cicadas. They are generally active at night and often lie quietly sunning in the daytime. Because they blend in well with the background, hikers in copperhead country should be alert for them lying along trail edges. Copperheads are generally quiet snakes and prefer to avoid people. They may lie motionless or try to retreat, but if threatened, they often vibrate the tail rapidly and strike vigorously. The bite, although poisonous, is almost never fatal.

THE "2-3-4" OF SNAKEBITE

James W. Grier of North Dakota State University (see Suggested Reading list) has developed an easy-to-remember "2-3-4" guideline for poisonous snakebite: 2 points for avoiding or minimizing the chances of being bitten, 3 things that SHOULD be done in case of poisonous snakebite, and 4 things that SHOULD NOT be done. This "2-3-4" guideline along with additional information from other sources was adapted for Nebraska. An article by Keith Sutton that appeared in Arkansas Game and Fish magazine (May/June issue, 1987) provided excellent information on avoiding poisonous snakebite, and the Mid-Plains Poison Control Center in Omaha, Nebraska helped with information on first aid.

Avoiding Poisonous Snakes - The "2"

1). NEVER HANDLE OR MEDDLE WITH A POISONOUS SNAKE -- this is dangerous for both you and those around you. Nearly one third of all snake bites reported in the U.S. are made by captive snakes. Be aware that killed snakes and even separated snake heads can bite for some time through reflex action. In fact, rattlesnake heads that were frozen or dried and mounted into tie tacks have caused poisonings when someone caught a finger or thumb on a fang.

Because children are small in size and naturally curious, they are susceptible to snakebite. To play it safe, instruct your children never to handle or go near snakes without the supervision of a knowledgeable and responsible adult.

2). ALWAYS BE ALERT, CAUTIOUS, AND PREPARED when in areas with poisonous snakes.

- Be attentive outdoors. Nebraska's poisonous snakes are naturally camouflaged. Before traveling in areas where poisonous snakes occur, use common sense in choosing foot and leg wear -- for example, wear high-top boots and loose-fitting trousers.
- When walking or climbing, place your hands and feet only where you can see. Be especially careful when stepping over or around logs or rocks, gathering firewood, crawling under fences, or reaching up over ledges.
- When camping, use a tent with a floor and zippered door, and camp in open areas such as patches of short grass or wide rock slabs that don't have snake hiding places. If you have no tent, try sleeping on a cot or picnic table.
- Before sitting down outdoors, look around carefully.
- Gather firewood before dark.
- Finally, understand where snakes are likely to be. Snakes are "cold-blooded," which means their body temperature varies with conditions around them. On hot days, they will be in shaded spots. On cool days, they need to warm up, so they will be sunning on rocks or maybe right on a road or trail. At nightfall, snakes are sometimes attracted to a paved road surface where they are warmed by heat radiating from the road. So use caution when walking or jogging on warm roads at night.

What SHOULD be done in case of Poisonous Snakebite - The "3"

The chance of being bitten by a poisonous snake is extremely small and death from snakebite is even rarer. In the United States, more people die from lightning than from snakebite. Also, it is estimated that about 20 percent of poisonous snakebites have no venom injected -- these are known as "dry bites." However, snakebites do happen, so you should think ahead before venturing where poisonous snakes occur. Medical understanding of what to do about poisonous snakebite has improved in recent years. Some earlier first aid techniques that you may have heard about are no longer recommended and may even be harmful.

In case of poisonous snakebite, you should focus on remaining calm and getting the victim safely to a hospital, rather than on doing something in the field. One doctor who has treated many snakebites commented that the best first aid kit for snakebite is a set of car keys.

1). STAY CALM. Think -- put your mind in control so you remain as calm as possible. The snake may be nonpoisonous and, if it is poisonous, it's best to stay calm. If you are with a snakebite victim, your response should be calm and reassuring for the bitten person. Keep the victim comfortable and the bitten area immobilized as much as possible. Because swelling may occur, remove rings, watches, and other bands near the bite.

2). GET TO A HOSPITAL/PHYSICIAN AS QUICKLY AND SAFELY AS POSSIBLE.

It's best to know the name, location, and telephone number of the closest hospital before you go into the field in an area where poisonous snakes occur (see wallet-size cut-out card). Carry or help the victim to a vehicle, then drive to a hospital. If you are alone when bitten, walk slowly and calmly to a vehicle, with occasional stopping and resting. Call ahead to the hospital, if you can without wasting time, to alert them that you are coming. When you call or at the time of arrival, ask if they have experience with bites. If not, or if they need further information, suggest that they call the MID-PLAINS POISON CONTROL CENTER in Omaha, Nebraska, for advice on proper treatment.

Don't worry about killing the snake. The person trying to kill the snake might get bitten, and having the dead snake will not help with treatment. In addition, trying to locate and kill the snake uses time and may cause the victim to be too active. And, even a killed snake can bite for some time through reflex action. Questions about whether the snake is poisonous will be established within a few minutes because poisonous snakebite causes pain and swelling at the site of the bite. Two fang marks will also show at the bite (all snakes have teeth; only poisonous ones have fangs). If you think you've been bitten by a poisonous snake but have no symptoms, it's best to be safe and go directly to a hospital anyway.

3). MID-PLAINS POISON CONTROL CENTER. Most medical centers in locations where poisonous snakes occur have information and experience on what to do for snakebites. If they do not, or you otherwise end up with a situation in which the medical personnel wish to consult, have them contact the Mid-Plains Poison Control Center located in Omaha, Nebraska. The phone number is on the cut-out card and service is available at all times, 24 hours/day. If you don't have the number during an emergency, simply call the telephone information operator for Omaha.

What SHOULD NOT Be Done - The "4"

1). DO NOT GIVE ALCOHOLIC BEVERAGES to the victim. Drinking and poisonous snakes don't mix -- many snakebite accidents involve persons who had been drinking. Use of alcohol after a bite may complicate the situation in general and increase the circulation and distribution of the poison.

2). DO NOT COOL the bitten area. Cooling with ice packs or by immersing in cold water was recommended for a few years by some persons. However, it led to numerous problems, including a number of unnecessary amputations.

3). DO NOT USE A TOURNIQUET. Like cooling, tourniquets cause problems and can lead to unnecessary amputations. They restrict circulation into the region, which reduces both the body's ability to fight the poison naturally and also deprives the tissues in the area of necessary oxygen and circulatory supplies.

4). DO NOT CUT into the bitten area. The old incision and suction method is no longer generally recommended for most cases of snakebite, although there is still some difference of opinion on the matter. Unless it is done by someone with formal training and proper equipment, and is initiated immediately (within a maximum of five minutes of the bite), it is ineffective and can be worse than the bite itself. It is the cutting that is dangerous.

Should You Kill Poisonous Snakes on Sight?

Poisonous snakes are dangerous when nearby because of their bite, so killing them when found near a home or populated area is certainly justified. In other areas, however, it's usually best just to leave them alone. Trying to kill a poisonous snake may result in someone being bitten, and the snake that from a distance looked like a poisonous one, may in fact be a similar-looking harmless type. Also, even poisonous snakes have a role in nature and their poisons hold secrets that people need. For example, one snake poison led to an important medicine for high blood pressure, and others are being studied for applications in preventing pain, treating blood and heart problems, and controlling harmful bacteria. And snakes are one of nature's best mousetraps -- they kill and eat rats, mice, gophers, young prairie dogs, and other animals that are often considered pests. So when thinking about killing, use your best judgement, but give the snake the benefit of a second thought.

Suggested Reading

Identification Guides

Behler, J. L, and F. W. King. 1979. THE AUDUBON SOCIETY FIELD GUIDE TO NORTH AMERICAN REPTILES AND AMPHIBIANS. Alfred A. Knopf, New York, 743pp. This guide uses quality color photographs to illustrate each snake, usually with some background habitat included. Photographs don't always present an animal in the best position for identification but generally this is not a problem. The text includes descriptions of each species along with good life history information and range maps.

Conant, R. 1975. A FIELD GUIDE TO REPTILES AND AMPHIBIANS, EASTERN AND CENTRAL NORTH AMERICA, Second edition. Houghton Mifflin Company, Boston, 429pp. This guide has excellent color illustrations that include small arrows to point out special identifying features. It includes general information about snakes, descriptions of each species, and range maps.

Other Useful References

Grier, J. W. 1987. SNAKEBITE. North Dakota Outdoors, March 1987, Number 8, pages 2-7. An excellent summary of snakebite information, portions of which are included in this NebGuide. It includes an annotated list of references related to poisonous snakes and snakebite.

Grier, J. W. ~1988. SNAKES AND THE PROBLEM OF SNAKEBITE. Unpublished guide. Zoology Department, North Dakota State University, Fargo, ND 58105. 6pp. An outstanding overview of snakebite information, including the "2-3-4" of snakebite and some information on snakes other than pit vipers.

Lynch, J. D. 1985. ANNOTATED CHECKLIST OF THE AMPHIBIANS AND REPTILES OF NEBRASKA. Transactions of the Nebraska Academy of Science 13:33-57. Includes excellent maps that show locations where Nebraska snakes are known to occur, along with some information on identification and abundance.

Sutton, K. 1987. ARKANSAS' VENOMOUS SNAKES, THE SERIOUS SIX. Arkansas Game and Fish, May/June, 1987, Vol. 18, No. 3, pages 13-21. An interesting overview of poisonous snakes and snakebite problems in Arkansas. It includes an excellent section on how to avoid snakebite, portions of which are included in this NebGuide. Single reprints are available at no cost from Arkansas Game and Fish, Information and Education Division, 2 Natural Resources Drive, Little Rock, AR 72205.

IN CASE OF POISONOUS SNAKEBITE

1. Stay CALM and quiet.

Remove rings, etc

2. Get to a HOSPITAL.

*Call in advance if possible

*Have hospital/physician contact the **POISON CENTER**

Phone: 800-955-9119

3. Do NOT cool, cut, or use a tourniquet on the bite.

"The best first aid kit for snakebite is a set of car keys"