

RATTLESNAKES

Although there are 12 species of snakes in Zion, the snake most commonly asked about is the western rattlesnake (Crotalus viridus). These snakes are present in Zion Canyon but are rarely seen. Rattlesnakes like the lower, dryer elevations but can occur up to 9,000 feet.

There are other snakes which resemble the western rattlesnake, and care should be taken when approaching any snake. Of the 7,500 people bitten annually by rattlers, approximately 10 succumb to the poison. What is the most commonly bitten part of the body? The HAND, not the ankle (many people are bitten in the act of PICKING UP rattlesnakes!). Western rattlesnakes can grow to a maximum length of five feet with most individuals being three feet long. The snakes have black to brown hexagonal patches on their backs. The rest of the body is grey to brown or olive to yellow (color is greatly variable in reptiles).

Most people can identify rattlesnakes by the presence of rattles on the end of the tail. Unfortunately, this is not a reliable characteristic as some rattlesnakes don't have rattles; they can easily be lost through injury. The best clue for identifying rattlesnakes is the broadly triangular head (see illustration).

There are people who believe that rattlesnakes are "out there" in the desert waiting for a poor, unsuspecting human to walk by; the snake can then lunge ferociously at its defenseless victim and inject its deadly poison with no apparent motive. However, most rattlesnakes are docile, mild-mannered individuals. Usually, when a rattlesnake is approached by a person, it will rattle a warning and move away. It is only when the animal feels threatened that it will react defensively.

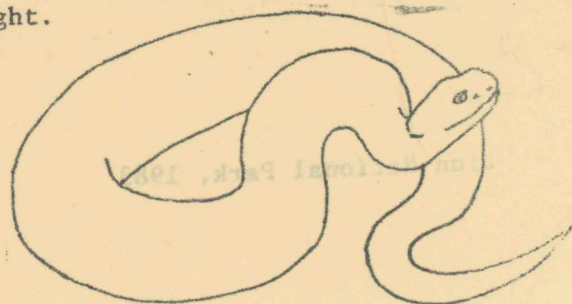
Snakes are reptiles, which implies certain characteristics. To be a snake you must: (1) have scales, (2) be limbless, (3) have no eyelids or ears (snakes can be distinguished from legless lizards as lizards have eyelids and/or ears), and (4) be ectothermic (cold-blooded).

Snakes are very sensitive to vibrations, however, and do pick up sounds transmitted along the ground. Snakes are able to close their eyes by tightly shutting their pupils. Their sense of smell is aided by the presence of Jacobson's organs, which are located in the mouth. Snakes gather aromatic particles from the air on their tongues and return them to these organs. That is why you see snakes constantly flicking their tongues!

Rattlesnakes belong to the family of snakes known as pit vipers. This name may conjure up images (like in old movies) of pits full of wiggling snakes. However, the term refers to the pits or indentations rattlesnakes have between each eye and nostril. These pits contain heat sensors and allow the animal to sense the presence of a warm object (such as a mouse) up to 1½ feet away. We will soon discover what function these pits play in the snake's life.

The rattlesnake has one of the most ingenious and complex modes of eating. We are all aware of their potent poison, but how is it used in the everyday life of the snake?

The poison is produced in modified salivary glands and injected into the victim (small mammals, lizards and birds) through hollow fangs. These fangs are retractable and usually lie against the roof of the mouth; they swing down into position for a swift strike. The snake will not rattle before a strike if the victim is to be eaten, since surprise is an important element of the snake's feeding strategy. The injected poison has many effects on its prey. There are anticoagulants present in the poison which prevent the blood from thickening and an enzyme which starts the digestive process before the animal is swallowed. This enzyme causes problems when humans are bitten because of tissue destruction, i.e., actual digestion around the wound. The prey animal will usually be able to run away before the poison takes effect, collapsing some distance from the snake. Now you can see how the pits come in handy. The snake will search the surrounding area with its heat sensors for a motionless, warm body. Heat sensors are also very useful for hunting in the dark of night.



General body form of the western rattlesnake.

How can an animal the size of a snake swallow a small rabbit? Snake jaws are fascinating. They are unhinged at the point of junction with the skull and are held in place with strong muscles, as yours are. However, the snake can stretch these muscles to open its mouth at the back as well as the front. (If you open your mouth wide, it only opens at the front and the back joint stays stationary.) The jaw is also unhinged at the chin so that the mouth can open wide laterally. Therefore, the snake can swallow a huge meal all at once! The injected enzyme aids a slow digestive process. The use of poison allows a small snake to catch and eat large animals with a minimum of effort and risk.

When humans are bitten they suffer the same problems as a prey animal. Snakes are in control of how much venom is injected, meaning a bite may inflict a full dose of venom or, in the other extreme, none. Therefore, the reaction to a bite may be severe or mild. As many as 10 to 30% of all bites are not envenomed.

There are tremendously varying opinions as to the first aid for rattlesnake bites, and only one bit of advice is sure: SEE A DOCTOR. Although it is unlikely that a rattlesnake would be encountered, you should be familiar with a treatment for rattlesnake bite if you are planning on hiking in the backcountry. If the victim is within 60 minutes of medical aid, the best treatment is to keep the person calm, reassured and taken to a professional. According to Park Service records, no one has been bitten in Zion by a rattlesnake. Please remember to handle even dead rattlesnakes with care. People have been bitten by a reflex action of the jaws even in badly mangled specimens.

Other snakes take advantage of the rattlesnake's reputation. These snakes mimic the rattle by shaking their tails in grass or leaves to imitate the sound and appearance of a rattler. Using this tactic they can scare off potential enemies.

Snakes are known as cold-blooded animals which simply means their body temperature relies on outside controls. This is called, more correctly, ectothermy or poikilothermy. If it is 32°F outside, the snake will be 32°F; if it is 110°F, the snake will be 110°F. Obviously, the snake could not survive at these temperatures and so relies on behavior to regulate its body temperature. Snakes retreat to shady spots, crevices, and burrows during the heat of the summer and lie in the sun on cool mornings. Care should be taken in selecting handholds if climbing in the desert. Snakes hunt primarily during the moderate temperatures of the night. This is why most people don't see snakes in Zion; people are out during the heat of the day and snakes know better! Snakes escape the extremes of winter by retreating to underground burrows and entering a period of dormancy called brumation, the reptilian equivalent of mammalian hibernation.

Let's put to rest the old myth that the age of a rattlesnake can be told by the number of rattles. Young snakes gain a rattle each time they shed, which may be 3 to 4 times a year, yet older snakes don't, and rattles are also easily broken off. One explanation for the evolution of rattles is that they served as a warning device to protect the snake from being trampled by the large, hooved animals that were once so plentiful in our country.

Snakes are truly fascinating animals and are due our respect and admiration. We may fear and loathe them because of their potential to do us harm, but if we can realize that these snakes have an important place in the environment and learn to live with them without fear, then we can begin to appreciate magnificent forms of life other than our own. Please remember that all animals are protected in the national parks.

Compare the triangular head of a rattlesnake (right) with the head shape of a non-rattlesnake (left).

