

SNAKES OF WEST VIRGINIA



Northern Copperhead

WEST VIRGINIA
DIVISION OF NATURAL RESOURCES
WILDLIFE RESOURCES SECTION

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WILDLIFE DIVERSITY PROGRAM

**P. O. Box 67, WARD ROAD
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*Cover photograph of Northern Copperhead by Larry D. Belcher.
Note: Copperheads have an elliptical pupil, as do Timber Rattlesnakes,
the only venomous snakes in West Virginia.*

SNAKES OF WEST VIRGINIA

Because of irrational fears, snakes are perhaps the most misunderstood creatures in West Virginia. These fears that are passed from one generation to another make many state residents shudder at the very thought of snakes. Yet these members of the reptile class play a vital role in the balance of nature. Their colorful and complex life histories are fascinating and give little justification for the apprehension felt by so many.

The fear of being bitten causes many persons to senselessly kill any snake they see. Yet, of the 20 species of snakes found in the Mountain State, only two are venomous, the Northern Copperhead and Timber Rattlesnake. Although the majority of venomous snake bites in West Virginia are from copperheads, no fatalities from copperheads have been recorded in over 30 years. From 1969 to 1992 only four people in the Mountain State have died from rattlesnake bites while in the wild. Bee stings, cows and horses caused 15 times as many deaths as snakes. Up to one-half of venomous snake bites result in no venom being injected. If, however, you are bitten by a venomous snake, see a doctor or go to a hospital *immediately*.

While the danger from snake bites is exaggerated, the ecological value of snakes is often overlooked. Snakes provide an essential pest-control service as a result of their feeding habits. While all snakes contribute to this service, some species are particularly beneficial. Both species of black snakes, kingsnakes, Timber Rattlesnakes and Eastern Milksnakes are well-known rodent predators. Enlightened West Virginia farmers encourage black snakes to make their home in the barn where the harmless reptile controls rat and mouse populations. While smaller kingsnakes consume large quantities of insects, larger kingsnakes may also feed on snakes.

Understanding the feeding habits of snakes is important if one wants to control them. Snakes can be discouraged from staying around yards and buildings by eliminating food and cover attractive to them. Because many snakes feed on rodents, it is advisable to make



Sam Norris

Mountain Earthsnake

all buildings rodent-proof if one does not want the company of snakes. Closely-mowed lawns and fields are less attractive to snakes than areas of tall grass, weeds or brush. Snakes seek food and cover under boards, flat rocks, trash piles and similar materials. By eliminating such shelter, one can often eliminate snakes. However, removing such shelter may be impractical around farms.

Snakes occasionally enter homes, sometimes by accident or sometimes while searching for hibernation quarters or mice. Those entering homes are almost always the harmless, nonvenomous kinds. Snakes can pass through extremely small spaces and usually enter buildings near ground level. Cellar doors, windows and screens should fit tightly; walls and floors should be inspected for crevices. Spaces around pipes that enter from the outside should be plugged, and galvanized screen can be fastened over other possible points of entry to keep snakes from entering dwellings. Mothballs, quick lime or sulphur, contrary to popular opinion, are not effective snake repellents.

The 20 species of snakes found in West Virginia range in size from about 10 inches to more than six feet in length. Snakes are complex and highly adapted animals that inhabit a variety of habitats. Color, size, shape, preferred habitat and geographical range are summarized in this brochure.



Eastern Gartersnake

QUEEN SNAKE (*Regina septemvittata*)

This slender, brown or gray aquatic snake has a yellowish stripe along the lower sides of its body and the yellowish belly is marked with four brown longitudinal stripes. Scales are strongly keeled (have a ridge down the center). Queen Snakes may grow to nearly three feet in length. They are found throughout the state, especially in small, rocky creeks and rivers. They feed on crayfish and other small aquatic animals. Females give birth to 5 to 31 live young which are approximately 7-8 inches long.



John MacGregor

COMMON WATERSNAKE (*Nerodia s. sipedon*)

On this snake the dorsal color pattern is a series of reddish-brown to black blotches on a background of pale gray to dark brown. The scales are heavily keeled. Their yellow to orange belly is liberally marked with dark crescent-shaped blotches. Watersnakes may exceed 4 feet in length. This is a very common and widely distributed species which is found along small streams, ponds and rivers where it feeds on fish, frogs and other aquatic animal life.



Mark Watson

Up to 50 young, which are six to nine inches long, are born each year.

The Common Watersnake is probably the most defensive snake in the state and is popularly referred to as the “water moccasin,” not to be confused with the Eastern Cottonmouth (*Agkistrodon p. piscivorus*), a venomous species found to our south. There are no confirmed records of the cottonmouth or any venomous water snakes occurring within West Virginia.

NORTHERN BROWNSNAKE (*Storeria d. dekayi*)

This small brown snake has two rows of black dots down its back and 17 rows of keeled scales. It may grow to nearly 20 inches in length



Tom Allen

and is found most frequently in moist woodlands where it feeds on small invertebrates such as slugs, snails, insects and earthworms. Up to 14 young approximately four inches in length may be produced.

NORTHERN RED-BELLIED SNAKE (*Storeria o. occipitomaculata*)

This small brownish snake is usually less than 16 inches in length and may have a light brown stripe down its back, three distinct yellowish spots at the base of its head, a red belly (although about 10 percent of these snakes have a gray or black belly in West Virginia) and 15 rows of keeled scales.



Mark Watson

Red-bellied Snakes may be found throughout the state in wooded areas where they feed on slugs and other invertebrates. As many as 13 young, approximately three inches long, are born per litter.

COMMON RIBBONSAKE (*Thamnophis s. sauritus*)

This very slender snake is often confused with the Eastern Garter-snake. The Ribbonsnake has a long tail which makes up about one-third of its total length and has three distinct yellow longitudinal stripes on a rich brown background; one stripe is down the middle of its back while the other two appear on its sides on the third and fourth rows of scales. Ribbonsnakes may grow to three feet in length and inhabit wetlands, especially swampy or marshy areas, where they feed on small aquatic vertebrates and invertebrates. Few records exist for Ribbonsnakes in West Virginia. Approximately 10-12 young which are six to nine inches long are born each year.



Tom Allen

EASTERN GARTERSNAKE (*Thamnophis s. sirtalis*)

This snake is quite variable in color, ranging from greenish, brownish or grayish with sometimes indistinct lateral stripes on the second and third scale rows. Gartersnakes are common in West Virginia. They may attain a length of four feet, and are frequently encountered in meadows,



Mark Watson

marshes, hillsides and city lots or buildings where they feed on any small animal they can catch. Up to 80 young, approximately three inches in length, may be produced.

EASTERN SMOOTH EARTHSNAKE (*Virginia v. valeriae*)

There are two subspecies of earthsnakes in the state, the Eastern Smooth Earthsnake described here and the Mountain Earthsnake described in the following account. The Eastern Smooth Earthsnake is secretive spending most of its time underground where it feeds on earthworms and other small invertebrates. Earthsnakes seldom exceed one foot in length and have smooth dorsal scales that are gray to brown. The belly is plain white or cream-colored. About ten young, averaging 3½ - 4½ inches long, are born per litter.



John MacGregor

MOUNTAIN EARTHSNAKE (*Virginia valeriae pulchra*)

The Mountain Earthsnake has been reported from Pendleton, Pocahontas, Preston and Randolph counties and may occur in other nearby counties. Its habits are similar to the Eastern Earthsnake but morphologically it differs in having weakly keeled scales and a scale row count of 17 at midbody (the eastern earthsnake has 15). Food habits and young are similar to the Eastern Earthsnake.



Mark Watson

EASTERN HOG-NOSED SNAKE (*Heterodon platirhinos*)

The distinctive feature of this species is an upturned snout which is used in rooting for toads, its major food item. Hog-nosed Snakes may be spotted with squarish blotches of bluish black on a tan background while some specimens are completely black. Hog-nosed Snakes have keeled scales and often attain lengths of more than 40 inches. They occur throughout the state in woodlands, along sandy edges of rivers and streams and in cultivated fields. Approximately 20-30 oval, white eggs are deposited in loose sandy soil.

The defensive actions of this snake are responsible for its being feared by many people. Hissing, flaring its head and neck, and feigned strikes (with the mouth closed) have led to such names as blowing viper,



Zac Loughman

The color variations of Hog-nosed Snakes are dramatic, as these two photos illustrate.



Mark Watson

spreading adder and puff adder. Finding its bluff ineffective, Hog-nosed Snakes “play possum” by twisting and turning on their back and assuming the posture of a dead snake. However, if turned over on the belly, the snake will immediately flop over on their backs again. Hog-nosed Snakes are among West Virginia’s most unusual and interesting snakes.



Ed McCreel/USFWS

Hog-nosed Snake playing dead.

NORTHERN RING-NECKED SNAKE (*Diadophis punctatus edwardsii*)

Ring-necked Snakes are distinctly marked with a bright yellow or orange belly, a glossy bluish gray or black back, and a bright yellow neck band. They rarely exceed 20 inches in length and are a secretive species that may be found in rotting logs, piles of dead leaves or under rocks. They feed on insects and small animal life. Ring-necks are widely distributed throughout the state. Up to ten small white oval eggs are laid per clutch.



Mark Watson

EASTERN WORMSNAKE (*Carphophis a. amoenus*)

Smooth scales, a small pointed head and a tail ending in a spine-like tip identify the Eastern Wormsnake. Seldom exceeding one foot in length, Wormsnakes have been collected throughout the state from bur-



Mark Watson

rows in the soil, organic debris and rotting logs. Prey consists of insects and earthworms. Two to six small, white, elliptical eggs are laid under rocks, in loose soil or rotting wood.

NORTHERN BLACK RACER (*Coluber c. constrictor*)

This snake is slender, glossy black in color and may attain a length of six feet. The dorsal scales are smooth and the chin and throat are white. Black Racers occur throughout the state in moist wood-

lands and fields, where they feed on birds and mammals, as well as amphibians and reptiles. Approximately 25 off-white, elliptical eggs are deposited in loose



Mark Watson

soil or sawdust piles. Hatchlings have 30 or more reddish brown blotches on a gray background. The banded juvenile pattern slowly disappears as the snake grows larger, and the snake is completely black by the time it reaches 30 inches in length.

NORTHERN ROUGH GREENSNAKE (*Opheodrys a. aestivus*)

This slender greensnake has a white or yellow belly, keeled scales and a tail that comprises one-third of its total length. Rough Greensnakes may attain a length of 45 inches and are usually found in vines, bushes or grass where it feeds on small insects and spiders.

They occur at low elevations in the western and central parts of the state but are absent in the mountains where Smooth Greensnakes are found. Up to 14 small, elliptical, cream-colored eggs are deposited in loose earth or under debris. Greensnakes are harmless and docile.



Mark Watson

SMOOTH GREENSNAKE (*Opheodrys vernalis*)

This is the other light green snake with a yellow belly. Its scales are smooth and it is not as slender as the Rough Greensnake. Growing to approximately two feet in length, Smooth Greensnakes are more often found in grass than in bushes. Its living habits are similar to the Rough Greensnake, but it occurs only in the mountainous areas of eastern West Virginia. Up to 13 eggs have been reported.



Mark Watson

CORNSNAKE (*Elaphe g. guttata*)

Red dorsal blotches outlined in black against a light brown background make this one of our most attractive snakes. Cornsnakes can reach six feet in length and its scales are weakly keeled. Cornsnakes have been collected in Eastern Panhandle farmlands where they feed on small rodents. About 10-15 white, elliptical eggs are deposited each year.



Tom Allen

BLACK RATSNAKE (*Elaphe o. obsoleta*)

This common and useful snake may exceed 6 feet in length, which

makes it one of our state's largest snakes. This shiny black reptile normally exhibits traces of its spotted juvenile pattern (light cross bars of white, cream or yellow) throughout its adult life. The belly is light-col-



Mizuki Takahashi

Nonvenomous juvenile Black Ratsnakes, right, are often misidentified as venomous Copperheads. The former's bands are more close together, while the Copperhead's bands are spaced further apart and have a more hourglass shape.



Nanci Cross-Fregonara

ored with alternating blotches that create a checkerboard effect. The dorsal scales are weakly keeled. Black Ratsnakes are found in a variety of habitats—houses, barns, fields, brushlands, woodlands and streams—where they feed on a variety of rodent and other warm-blooded prey, including birds and their eggs. Usually 10-14 elliptical, chalky-white eggs are deposited in loose soil.

NORTHERN PINESNAKE (*Pituophis m. melanoleucus*)

This spotted snake has black or dark brown blotches on a white or light gray background. Pinesnakes have a distinctively audible hiss and may reach a length of over six feet. This woodland snake feeds on small mammals and other warm-blooded prey. In West Virginia it is known from only one section of Monroe County where just one specimen has been collected. Approximately 3-24 whitish, elliptical eggs are laid annually.



Tom Allen

EASTERN KINGSNAKE (*Lampropeltis g. getula*)

There are two subspecies of kingsnakes in the Mountain State. The shiny black Eastern Kingsnake has a vivid yellow or white chain-like pattern along its back. Scales are smooth and the anal plate is single. It



WVDNR Photo

may attain a length of six feet. An uncommon species in West Virginia, Eastern Kingsnakes are found only in the valley of the South Branch of the Potomac River. Kingsnakes received their name from their habit of eating other snakes, including venomous ones. They also feed on frogs, lizards and mammals. Up to 24 white, elliptical eggs are laid in loose earth.

EASTERN BLACK KINGSNAKE (*Lampropeltis g. niger*)

This reptile is similar to the Eastern Kingsnake in living habits, size and appearance, except that the chainlike pattern is not as bold or pronounced. Some specimens are almost totally black with small flecks of yellow. Black Kingsnakes differ from the Black Ratsnake in having smooth scales and a single anal plate. It has been collected in Cabell, Kanawha, Lincoln, Mason, Putnam and Wayne counties.



John MacGregor

EASTERN MILKSNAKE (*Lampropeltis t. triangulum*)

This spotted snake has a row of large brown or reddish brown blotches on a background of gray along its back and smaller blotches



Mark Watson

along the sides which alternate with the larger dorsal ones. Milksnakes are often mistaken for Copperheads. The belly is white with black check-board markings, the dorsal scales are smooth, and the anal plate is

single. Lengths seldom exceed 40 inches. Milksnakes occur throughout the state in a variety of habitats. The name milksnake comes from the

erroneous folk lore that it enters barns and attaches itself to the udder of a cow and drinks her milk. Approximately 3-20 small, white elliptical eggs are deposited in loose earth.

NORTHERN COPPERHEAD (*Agkistrodon contortrix mokasen*)

This is one of the two venomous snake species in West Virginia. The color is a rich, reddish brown with a series of darker hourglass markings down its back. The bright copper colored head, pinkish belly, single anal plate, keeled scales and facial pit identify copperheads. Cop-

perheads average two feet in length and seldom exceed three feet. This is the only West Virginia snake that has dark bands across its back which are narrow on the back and broad on the sides—similar to an hourglass or saddlebag shape. Copperheads exist throughout the

state in rocky, wooded areas where they feed on small rodents and other warm-blooded prey. Occasionally, they may also feed on aquatic animals and insects. Approximately 3-15 young which are 8-9 inches in length are produced. Copperheads *do not* interbreed with blacksnakes.



Larry D. Belcher

TIMBER RATTLESNAKE (*Crotalus horridus*)

This venomous reptile is the only species of snake in the state with a segmented rattle at the end of its tail. It has brown or black chevron-shaped markings down its back. The background color may vary

from bright yellow to a dull gray. However, entirely black specimens have been recorded. Rattlesnakes rarely exceed six feet in length. Usually a docile snake, rattlers usually occur in remote, rocky, mountainous sections of the state. From 3 to 19, but usually about 8, young may be born which are 10-19 inches



Mark Watson



David Garst

Litter of young (7-14 days old) Timber Rattlesnakes. Their coloration will change as they age.

long. The pit viper's habit of congregating at dens creates situations where considerable numbers of rattlesnakes and copperheads can be seen at one time.

Handling Nonvenomous Snakes

Being bitten by a nonvenomous snake is nothing to be concerned or excited about. A bite from a one-or two-foot snake can hardly be felt. A bite from a 5-foot snake may hurt, but is usually not serious. First aid should consist of cleansing the bite with soap and an antiseptic. A bandage is rarely needed.

Most snakes will try to bite only when you attempt to pick them up. This is their natural reaction to something as large and threatening as a person. When handling a nonvenomous snake, support the snake evenly with both hands for several minutes to allow it to become accustomed to its predicament. Then slowly release the head while fully supporting its body with both hands. If the snake tries to move quickly (which some do) continue the hand-over-hand motion to maintain support. The idea is to make the snake feel secure and not in danger of being dropped. Some snakes, such as Black Ratsnakes will calm down within 15 minutes or so. They generally do not bite indiscriminately while being handled, but may bite when you try to pick them up for the first several times. They usually become accustomed to handling after a few days.

Be advised that other snakes such as Black Racers do not allow itself to be handled in this manner and are usually quite defensive and quick compared to Black Ratsnakes.

Identifying Nonvenomous And Venomous Snakes

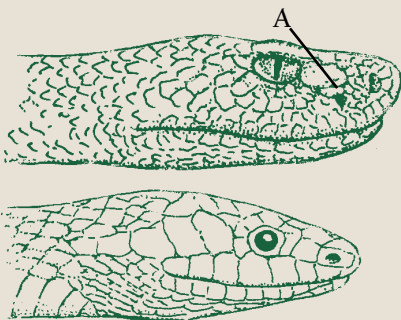
Nonvenomous snakes are often erroneously identified as venomous. There are three reliable characteristics, in addition to the rattlesnake's rattle, which may be used to separate West Virginia's harmless snakes from the venomous copperhead and rattlesnake: the shape of the pupil in the eye; presence or absence of the sensory pits; and scale patterns on the underside of the tail. In addition, our venomous snakes have broad, flattened, arrow-shaped heads, with narrow necks. The rattlesnake's rattle is an obvious characteristic, but the tail shape of a copperhead is not really different than the tail of a nonvenomous snake.

It is also useful to be able to distinguish copperheads from other snakes that have similar patterns, such as hog-nosed snakes, milksnakes and watersnakes, young black racers and black ratsnakes. Bands across the back of copperheads are hour-glass or saddlebag shaped, being narrowest along the top of the back. Bands across the back of other West Virginia snakes are the same width, or wider across the top of the back (*see illustration on following page*). Knowing this difference in patterns will allow you to distinguish a copperhead from snakes with a similar pattern if you only catch a glimpse of a snake as it is crawling under a rock or building. Although you may not be able to determine the species, at least you will know whether or not it is a copperhead (and consequently whether you need to be concerned about the presence of a venomous snake in your yard or barn).

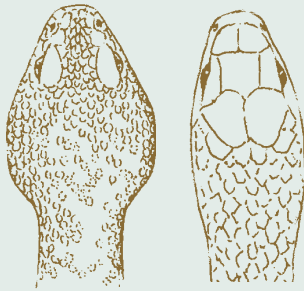
The eyes of copperheads and rattlesnakes are also a quick and obvious way to separate these species from the nonvenomous snakes in West

Virginia. Pupils are elliptically shaped, like a cat's eye. West Virginia nonvenomous snakes have round pupils. A dark background makes it difficult to determine whether pupils are round on some snakes, but the copperhead's and rattlesnake's elliptical pupils are obvious. Both milksnakes and copperheads have eyes with dark pupils against an orange background. However, milksnakes, which are often confused with copper-

Venomous snakes in West Virginia (top) have an elliptical pupil and a pit or opening (A) close to the nostril. Nonvenomous snakes (below) have a round pupil and no pit opening.



Venomous snakes (top) have broad, arrow-shaped heads with narrow necks. Nonvenomous snakes (below) have more slender heads.



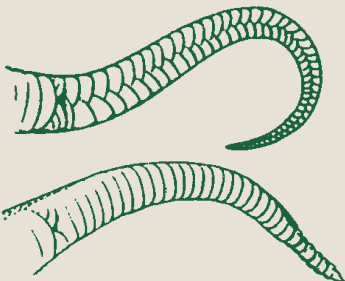
heads, have round pupils.

Most people believe they cannot get close enough to a snake to determine the shape or color of the eyes; however, you can easily see the eyes of a snake from several feet away. This is a safe distance for observation because snakes can only strike, at most, one-half of their body length.

There are two general types of dorsal scales on snakes, keeled and smooth. Keeled scales have a ridge along the center of the scale. The keel breaks or scatters light giving species with keeled scales a dull appearance. Conversely, in snakes with scales that lack this keel (smooth scales) light is reflected resulting in a shiny or glossy appearance. The use or significance of keeled versus smooth scales is not fully understood. All snakes have wide scales across the venter or belly. These scales are used for traction when a snake is crawling, much like the treads of a bulldozer. In venomous snakes (Timber Rattlesnakes and Northern Copperheads in West Virginia), these

ventral scales continue onto the tail as a single scale. In our nonvenomous snakes, ventral scales on the tail are divided.

Nonvenomous snakes (top) have divided scales on the underside of their tail. Venomous snakes (below) have undivided scales under their tail.



Above: Bands across the back of Copperheads (on left) are hour-glass or saddlebag shaped, being narrowest along the top of the back. Bands across the back of other West Virginia snakes (on right) are often the same width, or wider across the top of the back.



FOR MORE INFORMATION ON SNAKES
AND ALL OTHER REPTILES AND AMPHIB-
IANS FOUND IN WEST VIRGINIA, REFER
TO AMPHIBIANS AND REPTILES IN WEST
VIRGINIA BY DRs. N. BAYARD GREEN AND
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