

Snake Identification: Avoid Being Confused!

Identifying snakes can be confusing, especially for those afraid or simply not a big fan of them! There is a lot of information on the internet to help identify snakes, including photographs of the different snakes, often in their most brilliant and beautiful colorations. Unfortunately, color is NOT the best method of identification. Snake coloration can vary both among and within snake species. Therefore, it's best to **focus on their pattern**. In addition, New Jersey has some species that transition from a patterned juvenile stage to a more solid color, such as the Black Rat Snake and Northern Black Racer.

New Jersey is home to two venomous snakes, the Timber Rattlesnake and the Northern Copperhead. We **do NOT have** native/wild Water Moccasins, "Diamondbacks" or Coral Snakes. The Timber Rattlesnake resides in the state's Pinelands region and throughout most of the mountainous areas of the northern region of the state. They also are found within the valleys immediately proximate to the mountains during their summer movements. The Northern Copperhead shares the rattlesnake's northern range but also dips south with some [now] isolated populations found in Mercer, Hunterdon and Somerset counties.

Timber Rattlesnake...should be obvious, but it's not!

Identifying a Timber Rattlesnake isn't always as easy as it sounds...no pun intended!

- 1) The rattle: An obvious feature on the snake if seen, but if only the rattle is heard a person may be getting duped! Many New Jersey snakes mimic the rattlesnake by shaking the ends of their tails vigorously on leaves, grass, rock, logs, cement, etc., making a rattling sound and often confusing the observer! It's a great trick to warn off predators and, like it or not, humans are predators in the snake's eyes!
- 2) "Velvet tail": The last few inches of the living tail (i.e., the area excluding the rattle) is solid black appearing like black velvet, leading to the nickname "velvet tail."
- 3) Pattern: Regardless of color, the Timber Rattlesnake has a unique pattern (the darker color). It is often in the shape of irregular blotches along the neck nearest the head and becomes thick, jagged, lateral bands across the sides and back around mid-body. These bands are occasionally "broken" (i.e., not extending completely across) but overall, you can see the thick, jagged bands remain.
- 4) Color: As with other snake species, color can be highly variable. Even the Timber Rattlesnake, which is characterized by two color phases (yellow/light versus black/dark) based on the color of their head, demonstrates a wide range of coloration within those phases. For example:



Examples of "yellow" or "light" phase rattlesnakes.



Examples of "black" or "dark" phase rattlesnakes.

Photo credits: All photographs property of NJ DFW, ENSP.

Northern Copperhead vs Northern Water Snake vs Eastern Milk Snake

Two of New Jersey's snakes are often misidentified as Copperheads: the Northern Water Snake and the Eastern Milk Snake. (Please note, the Northern Water Snake is **NOT** the same as a Water Moccasin.) This confusion often is a result of the observer relying solely on color to identify the snake, but when compared, their patterns are quite different.



Northern Copperhead (venomous): N. Copperheads have a unique hourglass-shaped pattern (the darker color); wide on the sides and narrow across the back. No other snake species in NJ has this pattern. Some segments of the pattern may be "broken" presenting a ½ hourglass shape, but overall there will be complete lateral bands that are hourglass shaped and can be used for identification



Eastern Milk Snake (non-venomous and quite docile): The pattern (the darker color) consists of irregularly shaped blotches outlined in black along the length of the body. A light-colored irregularly shaped "Y" or "V" can be found on the back of the head.



Northern Water Snake (non-venomous but quite temperamental): The pattern (the darker color) is roughly a "reverse hourglass;" wider across the back and more narrow on the sides. A small dark blotch is often found along the sides of the snake within the lighter color. As water snakes grow and age, they can appear to be a solid dark color ranging from brown to black to deep reddish-purple.

Northern Copperhead neonates (newborns) and yearlings: These young copperheads have the same pattern as the adults: the hourglass pattern. However, they have one extra feature: a greenish-yellow-tipped tail! The last inch or so of young copperheads is a different color and used as a lure to attract their prey (frogs). Shaking it like a worm, they wait for the frog to get close and then...dinner! The unique gray coloration (far right) will transition into browns or coppers within the first year.



Photo credits: B.P. Kent (N. Copperhead-left), H. Lord (E. Milk Snake-left, A. Coutu (E. Milk Snake-right), M. Hogan (N. Water Snake-left), J. Pini (N. Water Snake-center), C. Myers (N. Water Snake-right), K. Schantz (N. Copperhead, neonate-left), S. Forbes (N. Copperhead, neonate-right); T. Christensen (N. Copperhead, neonates-right); all other photographs property of NJ DFW, ENSP.

Confusing newborns and hatchlings!

Adding to the difficulty of properly identifying the snakes is the similarities in some of young and juvenile snakes. However, **focusing on the pattern and not the color** will reveal how they are different.



Timber Rattlesnake neonates (newborns) and yearlings: Although these young snakes are often shades of gray, they have patterns just like adults with a blotchy pattern along their neck that transitions into jagged lateral bands around the mid-section, and an approximately 1" solid black color at the living tail's end (i.e., not the rattle). Unlike copperheads and non-venomous snakes, neonatal and yearling rattlesnakes have a small rattle giving it the appearance of a "blunt" end as opposed to the pointed tip of other species. In addition, the "stripe" down the back – not always distinguishable on adults – is very prominent on newborns and is often a rust brown or olive-green color.



Northern Water Snake neonates (newborns) and yearlings: These are probably the most confusing to identify as they appear to have jagged lateral bands like the rattlesnake. Upon closer examination, these snakes have bands along their entire body (no "blotches" along the "neck") and the pattern (dark color) is wide along the back and more narrow along the sides, creating a sort of "reverse hourglass" pattern, just like adults. The pattern extends to the end of their pointed tail; not a blunted tail like the rattlesnake.



Northern Black Racer (top-left, top-right) and Black Rat Snake (left) hatchlings and yearlings: Newly hatched young and yearlings are patterned! Racers have elliptical, uniform blotches down length of the body. Rat snakes have irregularly shaped (but uniform to each other) blotches down the length of the body. Both of their patterns run down through the tip of their pointed tails as opposed to the rattlesnake's "velvet tail." There is no stripe down the back!

(See additional information regarding these snakes below.)

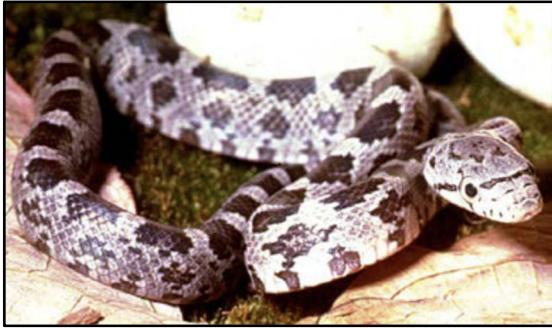


Northern Pine Snake neonates (newborns) and yearlings: These young snakes have patterns just like adults, with dark irregularly-shaped blotches down the length of their body through the tip of their pointed tails as opposed to the rattlesnakes "velvet tail." There is no stripe down the back! These young look A LOT like young Black Rat Snakes but there are subtle differences. The pattern (dark blotches) on the pine snake often have smoother, almost blurred edges towards the tail while the Black Rat Snake pattern remains a rugged outline. The pine snake has a somewhat more pointed snout used for burrowing, while the Black Rat Snake has a more rounded snout as they don't burrow.

Photo credits: K. Schantz (Timber Rattlesnake-left), J. Emery (N. Water Snake), Parke (Timber Rattlesnake-right), S. Ducker (N. Black Racer-left), H. Lord (N. Black Racer-right), R. Smith (N. Pine Snake-left and bottom); all other photographs property of NJ DFW, ENSP.

The amazing changing snakes...Black Rat Snake and Northern Black Racer

Unlike other New Jersey snakes, the Black Rat Snake and Northern Black Racer transition from a highly-patterned hatchling to a virtually all black adult. Although this occurs, observers are still able to [at least] distinguish between a venomous Timber Rattlesnake and these species by using the patterns. Below are photographs of the Black Rat Snake during various stages of growth/aging. Although there is not a comparative photographic representation of the Northern Black Racer, the overall concept of the Black Rat Snake's transition applies to the racer as well.



Black Rat Snakes are not black until they are mature; about 4 – 5 years old.

Hatchlings (left) and yearlings have irregularly shaped (but uniform to each other) blotches down the length of the body. The pattern runs down through the tip of their pointed tails as opposed to the rattlesnake's "velvet tail." There is no stripe down the back!



Juvenile Black Rat Snakes begin the transition, becoming overall darker but the pattern is still discernible.



Immature/sub-adult Black Rat Snakes have a remnant pattern. They've grown and as such, it appears as if the color and pattern are stretching out over a larger area. They are a mix of black, gray and white with no *truly* distinguishable pattern although to some, it *may* appear slightly diamond-shaped.



Adults have a black body with a white chin and throat and a white or pale yellow belly.

(N. Black Racer adults have a black body with a white chin and throat and a gray to almost a bluish-gray colored belly.)

Photo credits: R. Zappalorti (hatchling and adult Black Rat Snakes), L. Treutlein (juvenile Black Rat Snake), NJ DFW, ENSP (immature/sub-adult Black Rat Snake).

Odds and ends...

There are 22 species of snakes in New Jersey; about $\frac{3}{4}$ of which have been misidentified by observers as a Rattlesnake, Copperhead or both at some time. As with other snakes, **color can be highly variable so observers should focus on the pattern to identify a snake.**

This document is not meant to be used as the definitive guide to New Jersey's snakes, but below are two species that often give residents and visitors pause:



Eastern Garter Snake: Not venomous and common in and around residential communities. Both the adults and young have a single light-colored stripe down the center of the back and a checkered-board pattern within the background coloration.



Eastern Hognose Snake: Not venomous. Hognose snakes are either patterned or solid black for life. If patterned, both the adults and young snakes have a somewhat uniform rectangularly shaped pattern (the darker color). This snake also has an upturned snout which helps them create a pocket in the soil to lay their eggs. Unlike any other New Jersey snakes, this one will often play dead when feeling threatened, rolling over, emitting a foul odor, and sometimes even allowing its tongue to hang from its mouth.

Photo credits: M. Wiesner (E. Garter Snake-top left), NJDFW (E. Garter Snake-top right), K. Schantz (E. Garter Snake-bottom), J. Battista (E. Hognose Snake-top left), K. Thompson (E. Hognose Snake-top right), H. Lord (E. Hognose Snake-bottom left), R.G. Arndt (E. Hognose Snake-bottom right).



For more information about New Jersey's snakes and additional help with identification, please see our snake brochure at: www.njfishandwildlife.com/ensp/pdf/snake_broch.pdf

Please note, it is illegal to kill, harm, harass, handle or collect ANY of New Jersey's snakes (and their parts) under the NJ Endangered and Nongame Species Conservation Act.

Need assistance removing Timber Rattlesnakes and Northern Copperheads from private lands and/or public recreation areas?

The NJ Div. of Fish and Wildlife's Endangered and Nongame Species Program (ENSP) is dedicated to the protection and survival of NJ's native snakes because they are an important part of our natural environment. The ENSP has trained volunteers that will remove rattlesnakes and copperheads from private property upon request; the Venomous Snake Response Team. If you are in need of assistance or simply would like to report one of our rare species, please contact us:

Monday – Friday (8:30am – 4:30pm): (908) 713-1734, (908) 236-0173, (856) 629-5783
After hours, weekends or when unable to contact staff: 877-WARN-DEP (1-877-927-6337)

Rev. 4/19