

Black Rat Snake

Class: Reptilia. **Order:** Squamata. **Family:** Colubridae.

Other names: western rat snake, pilot black snake, or simply black snake

Physical Description: Juvenile black rat snakes are heavily blotched with patches of brown, grey and black. As they mature their coloration gradually darkens and maintains a white chin and throat. There can be remnants of the blotchy pattern maintained in the adult's coloration.



The black rat snake is Ohio's largest snake and can reach 42-72 inches (four to five feet) in length. A record of 8.5 feet in length has been recorded!

The black rat snake is a member of the family of **harmless snakes**, or **Colubridae**. This is the largest order of snakes, representing two-thirds of all known snake species. Members of this family are found on all continents except Antarctica, widespread from the Arctic Circle to the southern tips of South America and Africa. All but a handful of species are harmless snakes, not having venom or the ability to deliver toxic saliva through fangs. Most harmless snakes subdue their prey through constriction, striking and seizing small rodents, birds or amphibians and quickly wrapping their body around the prey causing suffocation. While other small species such as the common garter snake lack powers to constrict and feed on only small prey it can overpower.

Harmless snakes range in size from 5 inches to nearly 12 feet in length. The largest American species of snake is the indigo snake, a member of this family. It can grow to 11 feet as an adult!

Diet in the Wild: Primarily feeds on a wide variety of rodents and birds, as well as their eggs. Young rat snakes also eat lizards and frogs, especially tree frogs.

Diet at the Zoo: Rodents

Habitat & Range: Habitats range from rocky, wooded hillsides to flat farmlands. May be found in woodpiles, barnyards, and abandoned buildings. They are excellent climbers and spend considerable time in large trees, taking shelter in woodpecker holes and other cavities. They are found from Southwest New England and southern Ontario to Georgia in the East; southwest Wisconsin to Oklahoma and northern Louisiana in the Midwest; from sea level to 4,400 feet in parts of the Appalachian mountain chain.

Life Span: Captive longevity exceeds 15 years.

Perils in the wild: Birds of prey, some carnivores, human activity.

Physical Adaptations:

- Black rat snakes have a **Jacobson's organ**, pair of pit-like organs on the roof of the mouth that are lined with olfactory cells and nerves that interpret chemical stimuli in an animal's surroundings.

- Their forked tongue, flickering through the air, picks up scent particles and conveys them to the roof of their mouth and the Jacobson's organ.
- Rat snakes have stout bodies, square heads.
- Belly scales flat in the middle, ends angled up sharply where they meet the sides of the body. This enables the animal to obtain a better grip for tree climbing.

Behavioral Adaptations:

- Black rat snakes are commonly active during the day, but may hunt at night as well.
- When first encountered most black rat snakes freeze in position, blending in with their surroundings. If attacked or threatened, like all rat snakes, this species vibrates its tail rapidly. If cornered it may literally stand up and fight, with the forepart of its body reared upward, the head drawn back into an S-curve, its mouth held open in readiness to strike. If picked up, it will coil tightly around the arm and discharge a foul-smelling substance from the anal scent glands. (Note: Captive rat snakes generally do not exhibit these traits).
- Like most snakes, black rat snakes are mainly solitary.

Reproduction and Development:

- Like most snakes, rat snakes are egg layers. Between March and May, snakes begin to emerge from their winter hibernation. After a few weeks, they begin to seek out a mate, typically in late April, May, and early June. Males tend to wait for the females to pass through their territory, and, by using pheromones, communicate and initiate the mating process with the female.
- Black rat snakes are *oviparous* or egg-laying animals. A month after copulation, the female lays 12-20 eggs in a hidden area, under a hollow log, leaf pile or burrow. The eggs hatch in about 65-70 days. The hatchlings are vigorous feeders and double their size quickly. In good conditions the adult females may lay two clutches a season.

Additional Information:

- So-called "rat snakes" occur in various parts of the world except Africa or Australia. Five or more species with many subspecies occur in the United States which includes the familiar corn snake and fox snake. Seven subspecies of the black rat snakes may be found in the United States, all of which freely interbreed where geographic ranges overlap. Several distinctive *intergrade* populations are known due to subspecies interbreeding. An intergrade form means "to merge gradually one with another through a continuous series of intermediate forms." The black racer and black rat snake are often confused. The black rat snake is much duller in color and has a larger, flatter head than the black racer. It has a muscular build, while the racer's is more streamlined and graceful. Furthermore, the racer is a smaller snake, averaging about three to four feet long.
- The black rat snake is a non-venomous constrictor and is one of Ohio's most beneficial and splendid reptile assets. They play an essential role in controlling destructive rodents. They do sometimes raid barnyards seeking chicks and chicken eggs, thus the name "chicken snake." It also ascends rafters of abandoned buildings in search of birds, eggs and mice. Hawks may home in on a nest-raiding rat snake when it is being heckled by other birds. Because of its tendency to rattle its tail when threatened or startled, in the U.S. the rat snake frequently is mistaken for a rattler and killed.
- Black rat snakes often hibernate in rock crevices and other dens along with such snakes such as rattlesnakes and copperheads. The use of "pilot snake" or "rattlesnake pilot" as is their common

name in sections of the northeastern United States alludes to the erroneous belief that the rat snakes “pilot” these venomous snakes to safety in times of danger.

Ecological Role of Reptiles

- Snakes play an important role as both prey and predator in ecosystems all over the world. They can be very important in regulating the populations of pest species such as rodents which are common around human activity.
- Don't buy pets if you don't know where they are from. The ongoing trade in reptile products has a huge effect on the numbers of valuable species in the wild. Even buying tropical species from legal sources increases demand and encourages illegal trading.

Conservation Status: (IUCN Status):

Not Assessed, IUCN 2013

Conservation Efforts:

No conservation efforts at this time.

Glossary: List of definitions of the most important recurrent technical terms used in the text.

colubridae- the family of *harmless snakes*, or *Colubridae*. This is the largest order of snakes, representing two-thirds of all known snake species. Members of this family are found on all continents except Antarctica, widespread from the Arctic Circle to the southern tips of South America and Africa. All but a handful of species are harmless snakes, not having venom or the ability to deliver toxic saliva through fangs.

intergrade- when two subspecies breed in overlapping ranges, resulting in a race or form of animal that is an intermediate form of both subspecies.

oviparous - Reproduction in which the eggs are released by the female; development of the offspring occurs outside the maternal body. Adj., oviparous

Jacobson's organ- A pair of pit-like organs on the roof of the mouth that are lined with olfactory cells and nerves that interpret chemical stimuli in an animal's surroundings.

Sources:

- Cincinnati Zoo & Botanical Gardens
- http://www.bearriverranch.com/an_Snake_Black_Rat.html
- Hickman, C.P. Roberts, L.S. 1994. Biology of Animals
- Halliday, T. Adler, K. 1986. The Encyclopedia of Reptiles and Amphibians.