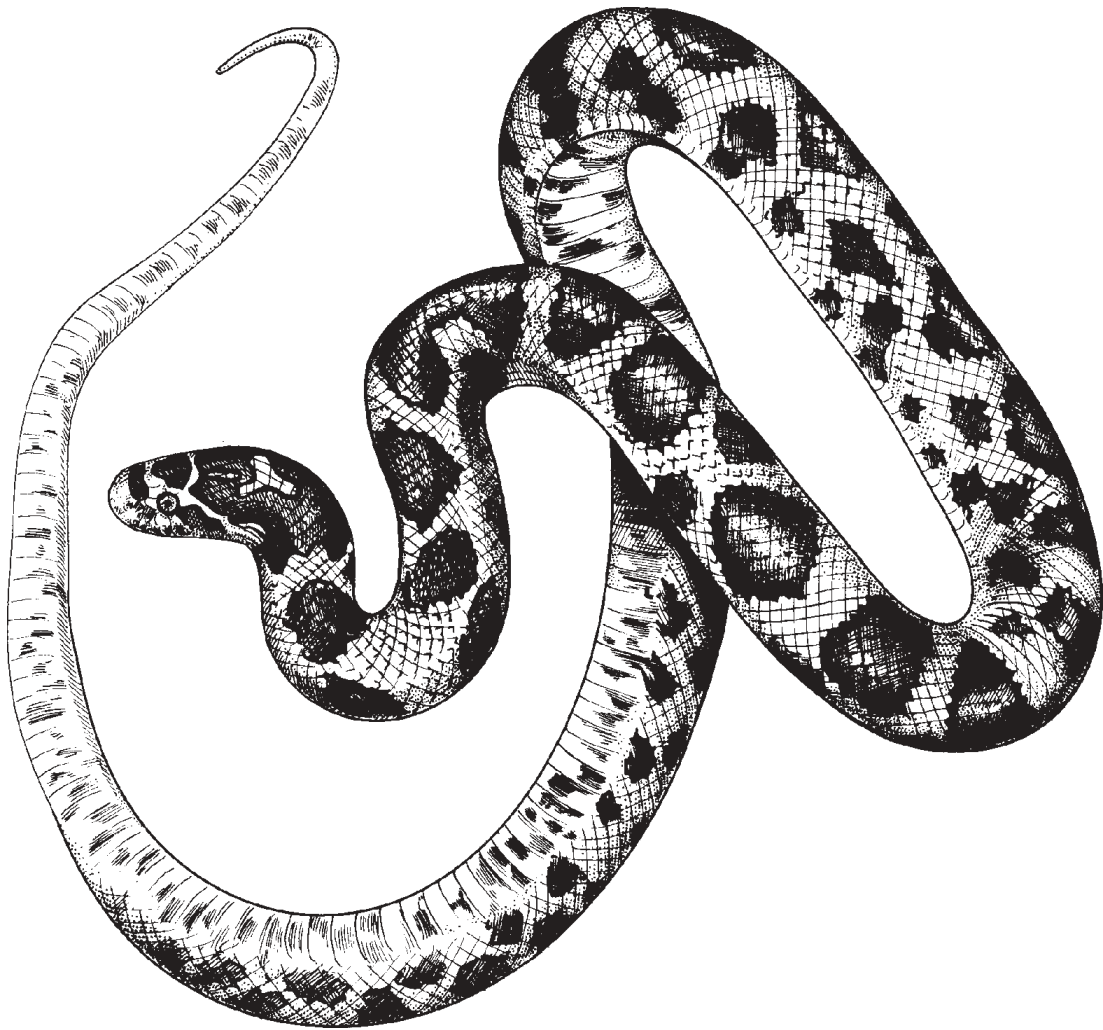


*Massachusetts Division of Fisheries and Wildlife
University of Massachusetts Extension*

MASSACHUSETTS

Snakes

A GUIDE

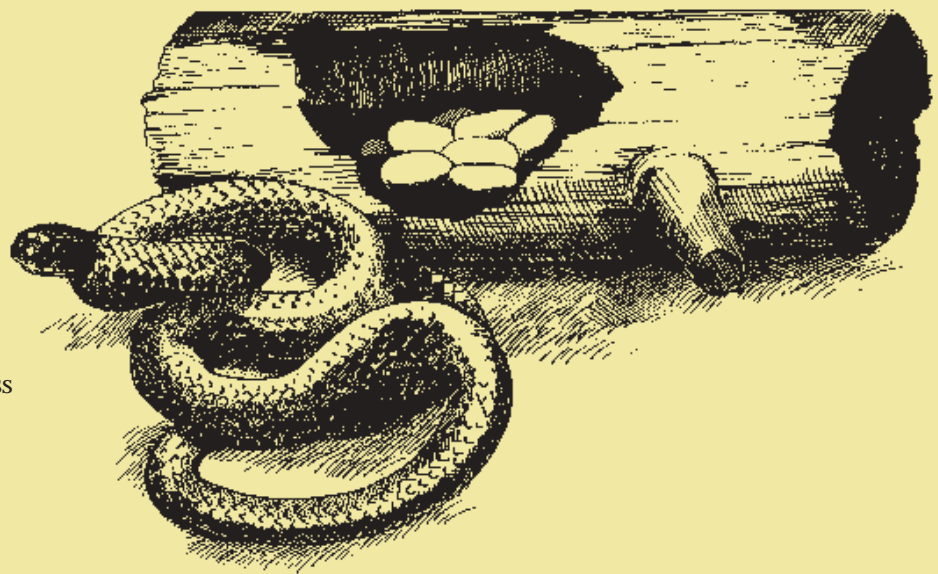


Scott Jackson and Peter Mirick

United States Department of Agriculture cooperating.

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**University of Massachusetts
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**Massachusetts Division
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INTRODUCTION

Many people are afraid of snakes, even people with a well-developed awareness of the environment and the natural world. This is unfortunate: the average snake that turns up in a backyard or on a pond shore (or even in a cellar) should not be regarded as any more frightening than a chipmunk. We hope that this publication will dispel some of the fear of snakes... a fear rooted in a lack of accurate information. We think that most people, once equipped with a little knowledge and understanding of these beautiful, interesting and inoffensive animals, will find that there is nothing left to fear.

History of Snakes

Snakes are the most modern of reptiles, first appearing in the fossil record during the time of the dinosaurs. It is thought that they evolved from ground dwelling or burrowing lizards that exploited the survival advantages to be found in a cylindrical, legless body. They gave up external ears and developed clear scales to shield their ever-open eyes from dust and damage. They evolved elongated internal organs, specialized muscles and resilient, scaled skins of varied pattern and color that provided camouflage and some limited protection from predators and the elements. They also evolved a host of instinctive behaviors that enabled them to find and catch prey, hide from predators, reproduce and survive in a great variety of climates. Tunnelling beneath dirt and sand, swimming in the seas, climbing in the crowns of trees and crawling on the land, snakes became integral components of varied ecosystems throughout the world. Some evolved

infrared heat sensors to find prey in the darkness of night or burrow. Some developed venoms (and the apparatus to deliver them) of such exquisite complexity and design that — unlike most biochemical substances — they cannot yet be manufactured through biotechnology or genetic engineering. In short, snakes are incredibly successful, unique and remarkable animals, well deserving of our respect and admiration.

Why, then, do so many people burden themselves with an irrational, senseless fear of snakes and an unwarranted prejudice toward them? The answer lies in the power and longevity of myth.

For centuries, snakes have figured prominently in the religions, customs and folklore of people throughout the world. To early humans, snakes must have possessed seemingly magical, almost supernatural attributes. They had the ability to move without legs over and through all types of terrain, vegetation and water. They had the ability to find, capture and eat prey without the aid of appendages, as well as to periodically shed an old skin and the ravages of time to reveal a new, brightly hued mantle. They could arise in the spring, resurrected from the ice of winter, and, in a few cases, could cause sickness or death with a single bite. A science fiction writer could scarcely ask for a better model, so it is not surprising that snakes gave rise to all manner of tall tales and myths.

The fear of snakes is an old, deeply entrenched form of prejudice, born of ignorance and perpetuated through superstition and myth. It is time that we stop judging these fascinating reptiles on the basis of folklore and ignorance.

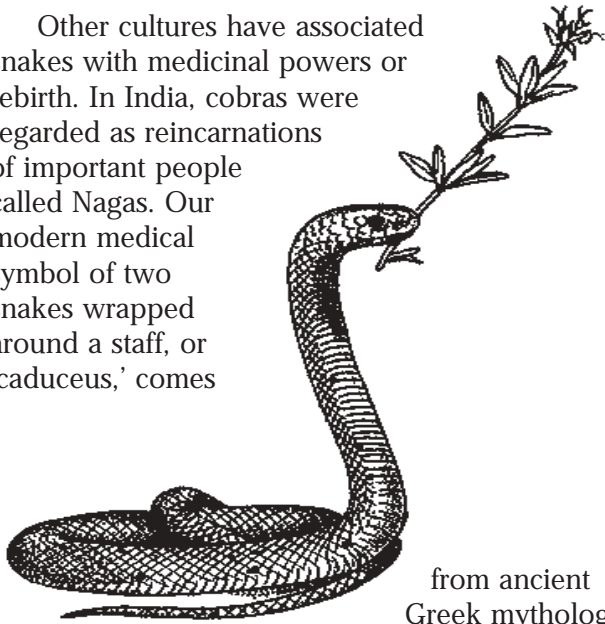
MYTHOLOGY

Cows, monkeys and dogs are revered by some cultures yet consumed as food by others. So, too, snakes are respected in some parts of the world and despised in others. The way that people feel about snakes is heavily influenced by cultural beliefs and mythology.

Some cultures held snakes in high esteem as powerful religious symbols. Quetzalcoatl, the mythical “plumed serpent,” was worshipped as the “Master of Life” by ancient Aztecs of Central America. Some African cultures worshipped rock pythons and considered the killing of one to be a

serious crime. In Australia, the Aborigines associated a giant rainbow serpent with the creation of life.

Other cultures have associated snakes with medicinal powers or rebirth. In India, cobras were regarded as reincarnations of important people called Nagas. Our modern medical symbol of two snakes wrapped around a staff, or 'caduceus,' comes



from ancient Greek mythology. According to the

Greeks, the mythical figure Aesculapius discovered medicine by watching as one snake used herbs to bring another snake back to life.

Judeo-Christian culture has been less kind to snakes. Tales of the Garden of Eden and the serpent's role in "man's fall from grace" have contributed to a negative image of snakes in western culture. In Appalachia, some Christians handle venomous snakes as part of ritual ceremonies, relying on faith to protect them from bites. Among Catholics, Saint Patrick is credited with ridding Ireland of snakes, a feat celebrated by many as a good thing.

Deep rooted cultural biases may be responsible, in part, for widespread fear and disdain for snakes. However, modern myths, from folk tales to plain old misinformation, also contribute to their negative image.

Modern Myths

Size. Snakes are almost always described as larger than they really are.

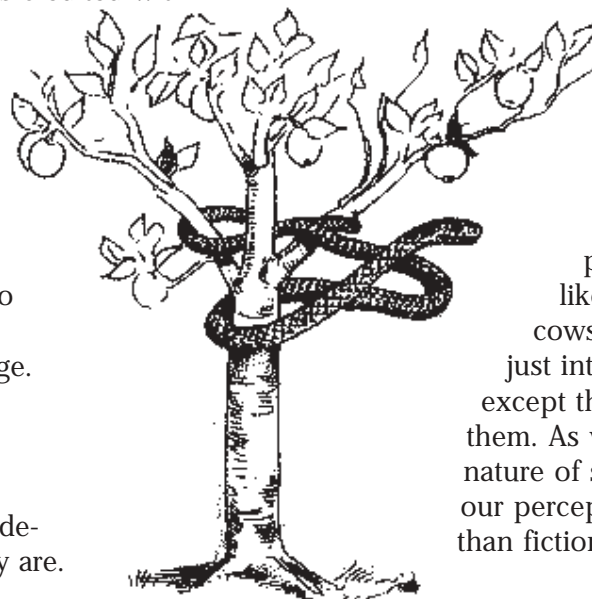
MYTH: HOOP SNAKES

Myth: When frightened, hoop snakes will bite their tails and roll downhill like a wagon wheel.

Reality: Anatomically, snakes are not well equipped for rolling and there are no reliable accounts of this ever occurring. The hoop snake myth may have been associated originally with mud snakes found in the southern United States. Mud snakes will occasionally lie in a loose coil shaped like a hoop, but they slither away from danger like other snakes.

Stories about New England water snakes eight and ten feet long are simply not true. Northern water snakes rarely exceed three and a half feet in length, with the largest stretching only four and a half feet. While the black rat snake, our largest native snake, can reach lengths of just over eight feet, most New England snakes are less than three feet long.

Venomous Snakes. The regularity with which people kill a snake first and ask questions later might lead you to believe that the world is overrun with venomous snakes. In fact, venomous snakes only make up about 10 percent of snake species worldwide, and in Massachusetts only two of the state's fourteen species of snakes are venomous (timber rattlesnake and northern copperhead). Both are rare, reclusive and generally confined to isolated areas.



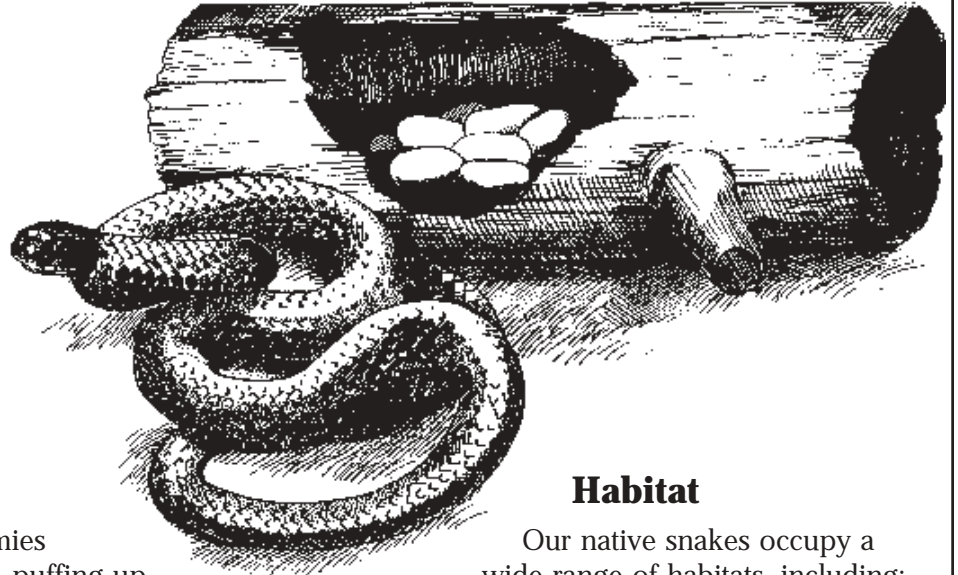
Folk Tales. Folk tales about snakes are handed down from generation to generation and include such things as snakes that charm prey, swallow their young for protection, poison people with their breath, roll like hoops, and suck milk from cows. These folk tales could be just interesting and amusing stories except that many people still believe them. As we learn more about the true nature of snakes, we can begin to base our perceptions of them on fact rather than fiction.

REALITY

In Massachusetts we have fourteen species of native snakes. Most of them, even as adults, are less than three feet long, and several are generally less than a foot in length. None of them are aggressive, although — like most animals — they will defend themselves if threatened, injured or captured. Even then, the defensive maneuvers of several species are nothing more offensive than releasing foul-smelling anal secretions. Other species attempt to frighten or intimidate potential enemies through bluff: flattening their heads, puffing up their bodies, rattling their tails or hissing. In self defense, some will indeed bite, but except in the case of our two extremely rare, venomous species, the resulting wounds are superficial. Our nonvenomous snakes all possess short, thin, very sharp teeth that leave clean, shallow wounds (rarely requiring even a bandage), and which — unlike the bites of mammals — carry no threat of disease. The important thing to remember is that unless you attempt to harm or capture a snake, it is almost impossible to get bitten. You have a better chance of being struck by lightning.

Reproduction

Depending on the species, snakes may be egg-layers or give birth to live young. They generally mate in the spring, shortly after leaving whatever hollow, burrow or rock crevice has sheltered them through winter hibernation. Egg-layers usually deposit their clutches (groups of eggs) in dirt, beneath stones or logs, or in piles of decaying wood or vegetation during late spring or early summer. Most snakes hatch or are born in late summer. Whether deposited as eggs or dropped as fully formed miniature adults, snakes are on their own from the start. Our snakes do not take any responsibility for the care and protection of their young. Most snakes mature at one or two years of age, and individuals may live up to twenty years in the wild.



Habitat

Our native snakes occupy a wide range of habitats, including: fields, forests, wetlands, ponds, lakes, streams, rocky hillsides, farmland, vacant lots and residential neighborhoods. Within those habitats, snakes may travel along the ground, swim, climb trees and bushes, and venture below ground. Although some snakes do burrow, most “snake holes” are produced by chipmunks, mice, shrews and other small mammals. Many snakes utilize these burrows for food, shelter and egg laying sites, but most species don’t dig holes.

“Cold-blooded”

Although it is said that snakes are “cold-blooded,” it is more accurate to say that they are unable to regulate their body temperatures by generating heat. During the active season they are rarely cold

MYTH: SWALLOWING YOUNG

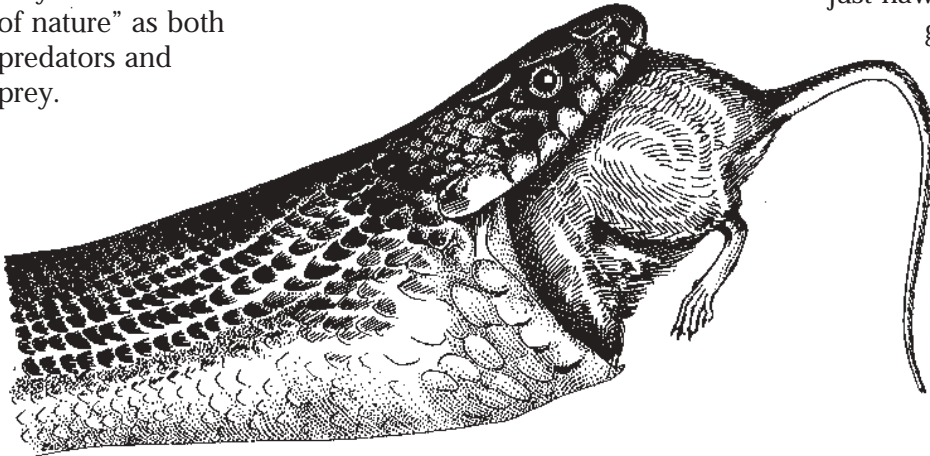
Myth: *When confronted with danger, mother snakes swallow their young, spitting them out later once danger has passed.*

Reality: Parental care is not very well developed in snakes and there is no evidence that mother snakes protect their young in this way. The myth may result from the fact that some snakes eat young snakes of their own species or of other species, though usually not their own brood.

and are surprisingly good at regulating their temperatures through behavior. Snakes can warm themselves by basking in the sun, lying under rocks or boards that are in the sun, or by lying on rocks and pavement that hold the heat after dark. When the air temperature is too hot, they seek shelter in small mammal burrows, under rocks and occasionally in cool cellars.

A Link in the Food Chain

Snakes are important components of natural ecosystems. Common in many types of habitat, they affect the “balance of nature” as both predators and prey.



All snakes are predators. Depending on size and species, they may feed on invertebrates such as slugs, worms and insects, or on fish, amphibians, snakes, birds, bird eggs and small mammals. Species such as the milk snake and black rat snake consume great numbers of rodents, and their presence around barns is of great benefit to farmers. In particular, the milk snake regularly enters burrows and will consume young mice and rats right in the nests. Garter, redbelly and brown snakes frequently consume garden pests such as slugs and certain soft-bodied insects.

Snakes find their prey by sight and scent, and sometimes temperature. Except for burrowing species, snakes have excellent short-range vision. Their sense of smell is extraordinary, thanks to a harmless, constantly flicking forked tongue that carries scent particles to a specialized sensory organ (“Jacobson’s organ”) on the roof of the mouth. Some species catch their prey by hunting

it down, others through ambush, and, although it is not known for certain, most species probably scavenge dead prey as well. Some species kill their prey through venomous bites, others by constriction, still others by simply overpowering and then swallowing their prey. Lacking any chewing teeth, all snakes swallow their meals whole. Depending on the size of the meal and the temperature of their resting habitat, our native snakes may eat as often as several times a day or as rarely as once a month.

Snakes and their eggs are in turn eaten by fish, amphibians, other snakes, birds and predatory mammals such as skunks, raccoons and opossums. Birds are their most serious predators — and not just hawks and owls. Songbirds consume great numbers of small snakes and it is not unusual to see the tail of a young garter snake dangling from the overstuffed gullet of a nestling robin!

MYTH: CHARMING SNAKES

Myth: Snakes have the ability to charm prey, especially birds, so they cannot flee.

Reality: There is no evidence that snakes charm their prey. Small animals may become “frozen with fear” when confronted by snakes but they are not charmed. Birds may flutter about in front of a snake in an attempt to lure it away from their nests; occasionally a bird may actually be captured by the snake, giving the impression that it was charmed. The fact that snakes never blink may also have played a role in this myth’s origin.

MORE ABOUT SNAKES

Common Snakes

While it is unlikely you will ever find a venomous snake in Massachusetts, odds are good that if you spend any time outdoors you will eventually encounter one or more species of harmless snakes. Five common snakes account for the majority of sightings in Massachusetts.

Undoubtedly, the most commonly encountered snake is the **garter snake**. This prolific, adaptable species thrives in suburban habitats and often utilizes the shelter provided by shrubbery, mulch, stone walls and cracked masonry around houses. Active by day, it is often observed in the morning, warming itself on stairs and sidewalks exposed to the sun.

MYTH: SUCKING MILK

Myth: Milk snakes are so named because of their ability to suck milk directly from the udders of cows.

Reality: Although milk snakes are common around barns that house cows, they completely lack the anatomy necessary to suck milk (or anything else for that matter). Barns are attractive to milk snakes because they provide abundant food in the form of small rats and mice.

The **milk snake** makes use of many of the same habitats as the garter snake and will sometimes enter buildings in search of mice, its favored prey. Though quite common, its secretive nature and nocturnal habits make it less likely to be encountered than the garter snake. Occasionally, it can be seen sunning itself on spring and early summer mornings.

A small, common, secretive species, the **ring-neck snake** is rarely found in the open. This inoffensive, pretty snake with the bright band around its neck is sometimes encountered in damp or dirt-floored basements that offer ample food in the form of salamanders and insects.

Frequently encountered by fishermen and boaters, the **water snake** is one of our most

prolific species and can be found in virtually all pond, river and wetland habitats throughout the state. Water snakes are often reported by homeowners who find them in the spring as they disperse from hibernation sites. Though large individuals may look quite sinister with their triangular heads and heavy bodies, these stocky eaters of fish and frogs are harmless and should not be confused with the venomous cottonmouth “water moccasins” of the southeastern states.

The “blacksnake” or **black racer** is a long, slender “sight-hunter” known for its speed and agility. (Its top speed is actually only 3.6 miles per hour.) It is usually encountered in rural habitats of mixed brush, field and forest. Although this alert, inquisitive reptile often raises its head up to observe approaching people or other disturbances (and may even follow people for short distances to satisfy its curiosity) it quickly turns tail and flashes away at the slightest hint of danger.

“The Great Pretender”

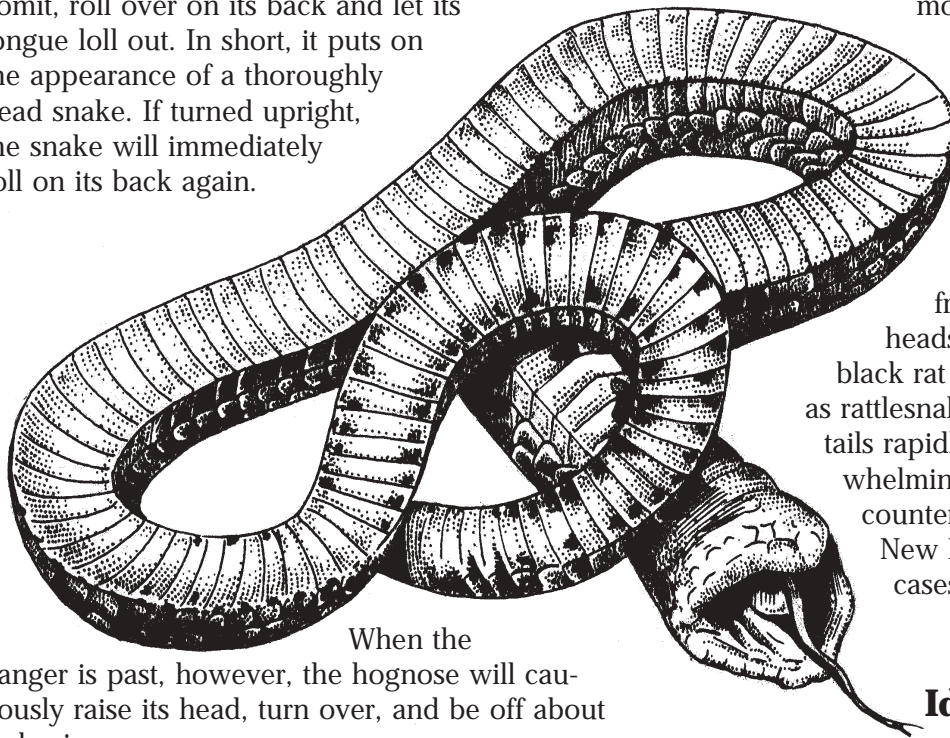
Though relatively rare, a chance encounter with a **hognose snake** is always memorable. This harmless “great pretender” puts on such a fearsome display when alarmed that it actually looks and sounds far more dangerous than either of our venomous snakes! Sometimes called the “puff adder,” this habitual eater of toads will inflate its body, hiss loudly, lunge about ferociously and spread a surprising cobra-like hood. Despite this impressive appearance, it almost never bites.

MYTH: POISONOUS BREATH

Myth: Puff adders (hognose snakes) mix poison with their breath and can kill a person at a distance of twenty-five feet.

Reality: Although the bite of a hognose snake can produce swelling and a burning sensation, these snakes rarely bite people and are not considered venomous. When confronted, they do puff themselves up and hiss, but their breath is harmless.

If this incredible bluff fails to drive off the offender, the hognose will writhe about, vomit, roll over on its back and let its tongue loll out. In short, it puts on the appearance of a thoroughly dead snake. If turned upright, the snake will immediately roll on its back again.



When the danger is past, however, the hognose will cautiously raise its head, turn over, and be off about its business.

Venomous Snakes

There are only two venomous snakes in Massachusetts — the **timber rattlesnake** and the **copperhead**. (Contrary to popular belief, there are no venomous “water moccasins” in the Bay State, only harmless water snakes.) Statewide, populations of our two endangered venomous snakes are believed to number no more than a few hundred individuals. Due to a host of problems, these populations are probably still declining despite rigorous efforts to protect them. Our “rattlers” are now known to exist at only a dozen or so widely scattered sites in mountainous regions of the state; the distribution of copperheads is even more restricted. As a result, most of Massachusetts is completely devoid of venomous serpents.

The chance of receiving a venomous snake bite is further reduced by the fact that both species are shy and reclusive. Like all snakes, they will bite people only in self defense. If you do not willfully seek out and attempt to confront these species, the chances of being bitten by either are negligible. The toxicity of their venoms tends to be highly

overrated; only one person has ever died of snakebite in Massachusetts, and that was more than 200 years ago.

Always keep in mind that many harmless snakes resemble venomous snakes in pattern and behavior. Milk snakes, water snakes, hognose snakes and other banded or blotched species are frequently mistaken for copperheads. Milk snakes, black racers and black rat snakes are often misidentified as rattlesnakes because they vibrate their tails rapidly when alarmed. The overwhelming majority of reports of encounters with venomous snakes in New England are nothing more than cases of mistaken identity.

Identification is the Key

Snakes encountered around the home are almost certainly harmless and nonvenomous. With just a little effort you can confirm this with an identification. It is a simple matter to learn to recognize our five common snakes at a glance. More secretive and rarer species can be easily identified through use of the identification guide provided (pages 16-19). It is a curious fact that when we have the ability to put a name to something and understand its motivations, it tends to lose the power to frighten us.

MYTH: COTTONMOUTHS IN NEW ENGLAND

Myth: Swimmers in New England are advised to watch out for venomous cottonmouths, also known as water moccasins.

Reality: Simply put, there are no water moccasins in New England. The cottonmouth, or water moccasin, is a venomous snake of the southeastern United States that occurs no farther north than the Great Dismal Swamp of Virginia. Many people mistake nonvenomous water snakes for water moccasins.

Snakes Phobias

Some people have such an overwhelming, irrational fear of snakes that the phobia may restrict their lifestyles. This fear — known as ophidiophobia — may cause such people to avoid all areas where there is the slightest chance that a serpent could be encountered. Some cannot enjoy gardening or their own backyards, let alone a hike in the country or a summer dip in the local pond. Many victims of this phobia cannot view a movie or photograph of a snake without experiencing acute anxiety, and could not bear to read this publication. If you know such a person, let them know that effective treatment is available. Tell them to contact their doctor or local medical clinic for a referral and get back to enjoying the outdoors!

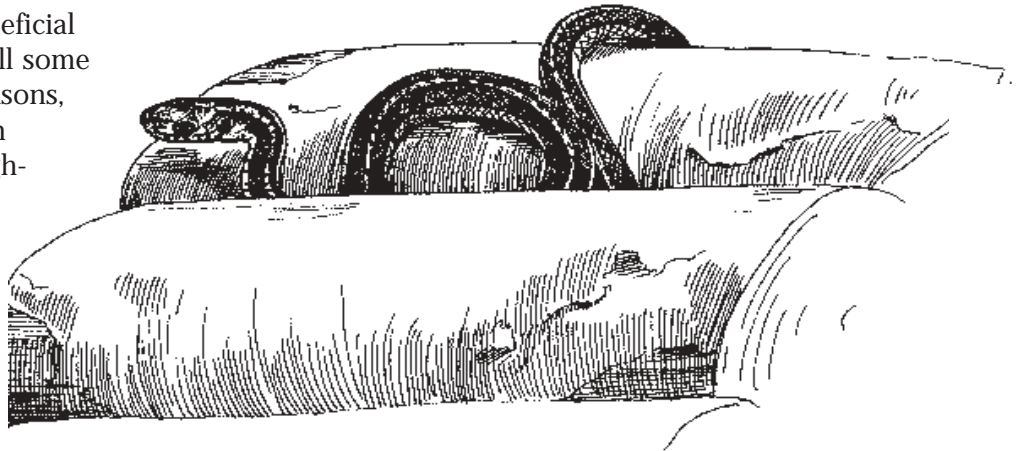
Snakes In and Around the Home

Despite the harmless and beneficial nature of snakes, there are still some people who, for whatever reasons, want to discourage them from inhabiting their yards. Throughout the warm months — and particularly in the spring when the mating season and the need to bask causes snakes to be more obvious than usual — we get calls from people wanting to get snakes away from their homes. As with most things in life, the solution requires tradeoffs which should be thoughtfully weighed against the dubious inconvenience of having a snake or two around the yard.

While the adaptability and perseverance of our common snakes makes them extremely difficult to eliminate entirely, removing potential shelter can significantly reduce the number of snakes in an area. Shelter for snakes is almost anything close to the ground that they can enter or get beneath to avoid predators and extreme temperatures. Boards on the ground, log and leaf piles, cracks and crevices in foundations, rock walls, ground-

hugging shrubbery, dense patches of vegetation and narrow spaces beneath decks and outbuildings are all popular forms of cover. The number of snakes around a home can be reduced by sealing or removing some or all of these shelters, but use common sense. A nearly snake-free yard would have a wide, close-cut lawn extending right to a tightly sealed foundation: no flower gardens, no rocks, no shrubbery. Unless you really want to surround yourself with a boring, uninviting landscape, it is much easier to live with an occasional snake in the yard.

A snake in the house is another matter. While milk snakes may live undiscovered in rock foundations for generations and the pretty little “ring-necks” may survive comfortably amid the debris of a dirt-floored crawl-space, most snakes — especially garter snakes — end up in houses by accident. They cannot live in such habitats for long.



Most are victims of falls and a poor sense of direction. They usually turn up in the spring, having hibernated in the foundation and emerged on the wrong side of the wall.

A snake in the house — especially in the typically jumbled cellar — is not an easy animal to locate. If it's any consolation, the snake will probably avoid living areas. If you can find it, check to be certain that it is a harmless snake, grab it with a pair of work gloves, and let it go outside. If the

► **(SNAKES AND PEOPLE** continued on page 15)

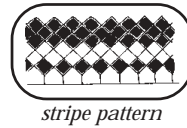
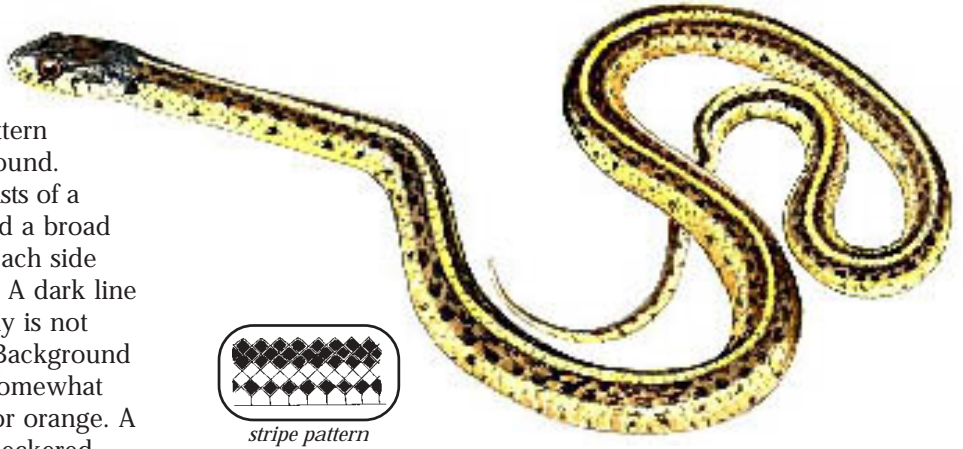
Common Garter Snake

Thamnophis sirtalis (18-26", up to 48")

Generally, you can recognize this most common of all New England snakes by its pattern of yellow stripes on a black or brown background. Although the pattern is variable, it usually consists of a narrow stripe down the middle of the back and a broad stripe on each side. Between the center and each side stripe are two rows of alternating black spots. A dark line separating the yellow side stripe from the belly is not particularly bold as it is in the ribbon snake. Background color is usually brown or black, but may be somewhat green or reddish. Stripes may be tan, yellow or orange. A garter snake will occasionally appear more checkered than striped. The scales are keeled* and the belly is yellow or pale green.

Garter snakes generally mate after emerging from hibernation in March or April. Females give birth to 12-40 young anytime from July through October.

Garter snakes occupy a variety of habitats including pond and stream edges, wetlands, forests, fields, rocky hillsides and residential areas. They are often observed as they bask on rocks, wood piles, stone walls, hedges and swimming pool decks. Although they feed on a variety of



small animals, garter snakes' primary prey are earthworms and amphibians. Their saliva appears to be toxic to amphibians and other small animals and a bite may produce swelling or a burning rash in some people. Although garter snakes may or may not bite if handled, most individuals secrete a foul-smelling fluid from anal glands when alarmed. Occasionally, garter snakes make their way into basements, a situation that appears to be most common in spring and autumn.

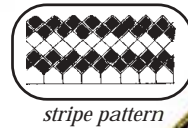
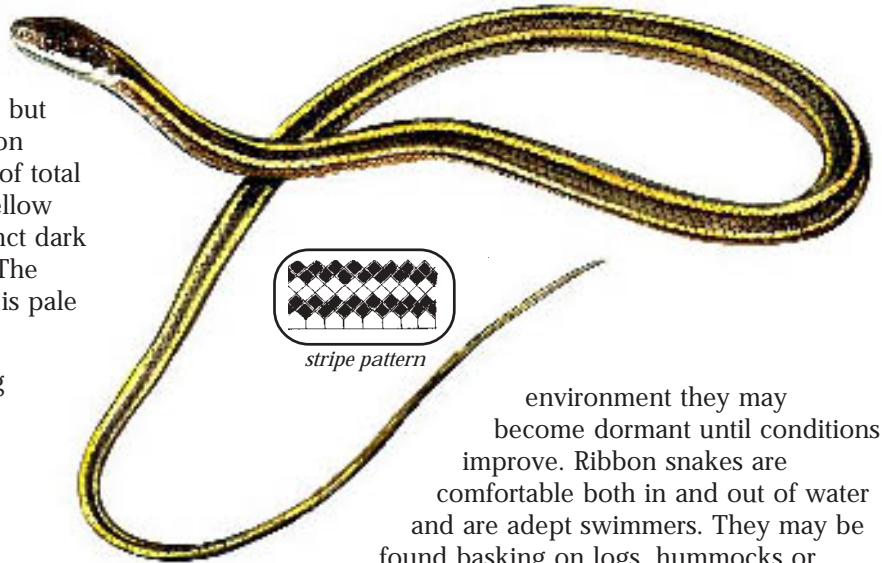
Eastern Ribbon Snake

Thamnophis sauritus (18-26", up to 38")

The ribbon snake is a very slender, striped snake, similar in appearance to the garter snake but with a much longer tail. Tail length for the ribbon snake generally accounts for one third or more of total body length. It is boldly patterned with three yellow stripes on a reddish-brown background. A distinct dark band separates each side stripe from the belly. The ribbon snake has keeled scales and a belly that is pale yellow or pale green.

Ribbon snakes generally mate in the spring (April-May), after emerging from hibernation, and females give birth to 10-12 young in July or August.

The preferred habitats of ribbon snakes are wetlands and the edges of ponds and streams. Amphibians, especially frogs, are their preferred food, although fish and insects are also taken. Given their preference for wet habitats, ribbon snakes tend to be most active during the spring. If summer weather dries up their

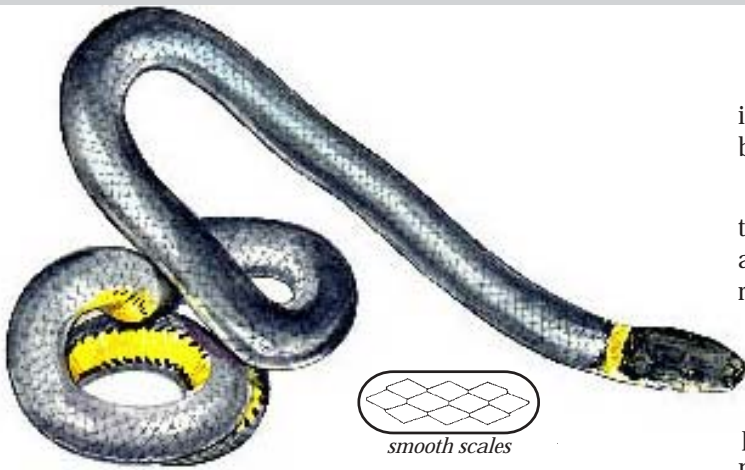


environment they may become dormant until conditions improve. Ribbon snakes are comfortable both in and out of water and are adept swimmers. They may be found basking on logs, hummocks or muskrat lodges, and escape rapidly into dense cover or open water if threatened. Ribbon snakes rarely bite if handled, but they do secrete a foul musk from their anal glands when alarmed.

*The word 'keeled' indicates that on most scales on the snake's body, there is a ridge running the length of each scale. A snake with keeled scales has a rougher look and feel than a smooth scaled snake.

Ringneck Snake

Diadophis punctatus (10-15", up to 27")



Named for a yellow band around the neck, the ringneck snake is relatively easy to identify when encountered. Its back is either slate gray, black or brown with smooth scales giving it a satin-like appearance. A complete yellow ring just behind the head, along with smooth scales, distinguishes it from redbelly or juvenile brown snakes. The belly

is bright yellow or rarely orange, and may occasionally bear a few small black spots.

Mating takes place in spring or fall, with 3-4 eggs (up to ten) laid in June or early July. Eggs are about 1" long and are deposited together under rocks or other cover, in rotting logs and stumps, mulch piles or small mammal burrows. Hatchlings emerge in August or September.

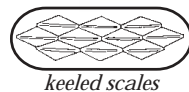
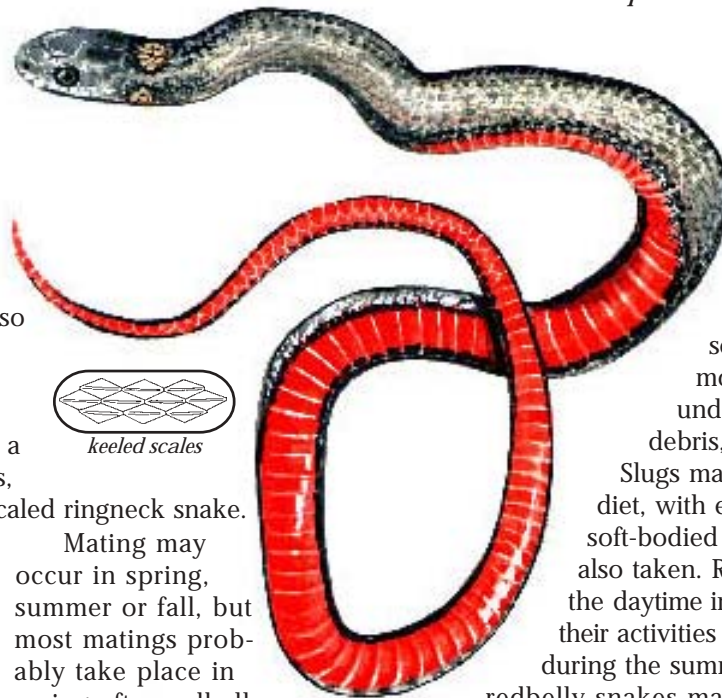
Ringneck snakes prefer moist woodlands as their habitat. This is also habitat for an important prey item, redback salamanders. Although salamanders make up the bulk of their diet, ringnecks will also feed on earthworms, insects and, on occasion, fish. As relatively small snakes, they rarely bask in the open and are generally found under cover (rocks, logs, boards, debris) during the day. Like the salamanders on which they prey, ringnecks are usually nocturnal. They are most active in spring and fall and are rarely seen during summer. Among all the New England snakes, ringnecks are most likely to end up in someone's basement. Ringneck snakes rarely bite, but may release a foul musk when handled.



Redbelly Snake

Storeria occipitomaculata (8-10", up to 16")

Both the common and scientific names for this small snake refer to characteristics that help identify it. 'Occipitomaculata' refers to three light spots located just behind the head. Redbelly generally describes the color of the underside, although the color can vary from yellow (rarely), to orange to red. The overall color of this snake is also variable, and it can be brown, bronze, slate gray or, rarely, black. Occasionally the three spots behind the head may be fused into a ring. The redbelly has keeled scales, distinguishing it from the smooth-scaled ringneck snake.



Mating may occur in spring, summer or fall, but most matings probably take place in spring after redbellies emerge from hibernation in April. Their young are born alive, typically from late July through early September, with 4-9 snakes to a brood.

Although woodlands are preferred habitats, redbelly snakes are also found in fields, bogs and wet meadows, as well as along the borders of marshes, swamps, ponds and streams. They are small and secretive snakes and spend most of their time hiding under rocks, logs, boards or debris, or within rotted stumps.

Slugs make up the bulk of their diet, with earthworms, sow bugs, soft-bodied insects and small frogs also taken. Redbellies are active during the daytime in spring and fall, but restrict their activities to twilight and nighttime during the summer. When handled,

redbelly snakes may curl their upper lips and show their teeth; however, they rarely bite. If sufficiently disturbed they will release musk from anal glands.

Brown Snake

Storeria dekayi (9-13", up to 20")

True to its name, the brown snake is dark brown to grayish brown in color. It generally has a broad light stripe bordered by dark spots down the back. The belly is pink or buff colored, sometimes with rows of small black spots. As a juvenile it has a light ring around the neck. However, unlike the ringneck snake, the brown snake has keeled scales.

Brown snakes emerge from hibernation after the ground thaws in the spring. They typically mate in spring or early summer, and 8-20 young are born alive from mid-July through August. Although they are generally forced into hibernation by November, brown snakes may emerge briefly during periods of warm winter weather.

Found in a variety of wild habitats such as wetlands, grasslands and forests, brown snakes are most often encountered in urban or residential areas. It is not uncommon to find several (or many) brown snakes under debris in vacant lots, parks and cemeteries. Earthworms and slugs are their preferred foods; however, they will also take sow bugs, insects, spiders, small fish and small frogs. They are



active during the daytime in spring and fall, but are primarily nocturnal during the summer. Brown snakes rarely bite but, like most snakes, will release musk from their anal glands when alarmed.

Worm Snake

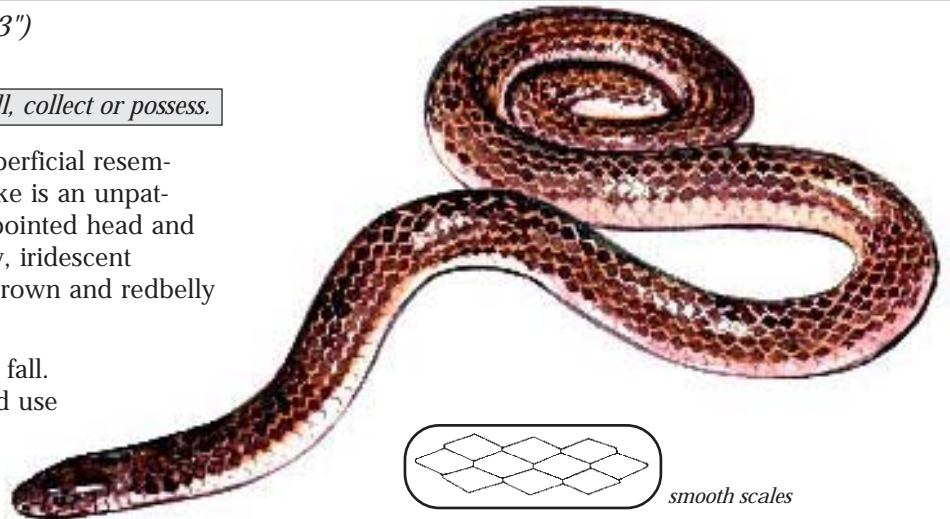
Carphophis amoenus (7-11", up to 13")

Status: "Threatened." Illegal to harass, kill, collect or possess.

This small burrowing snake shares a superficial resemblance to an earthworm. The worm snake is an unpatterned brown snake with a pink belly, pointed head and small eyes. Smooth scales give it a shiny, iridescent quality, and readily distinguish it from brown and redbelly snakes that have keeled scales.

Worm snakes appear to mate in the fall. Females store the sperm over winter and use it to fertilize eggs in the spring or early summer. Eggs are deposited under rocks or inside mulch piles, rotting logs or stumps. A typical clutch consists of 2-5 small eggs. Eggs laid in June and early July generally hatch in August and September.

In Massachusetts, worm snakes have been found only in the southern Connecticut Valley where they prefer areas with sandy soil. Moist woodlands with either sandy or rocky soils provide the best habitat. They feed almost exclusively on earthworms, although other small slender prey such as salamanders, fly larvae and slugs are occasionally taken. Rarely seen in the open, worm snakes may be



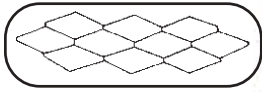
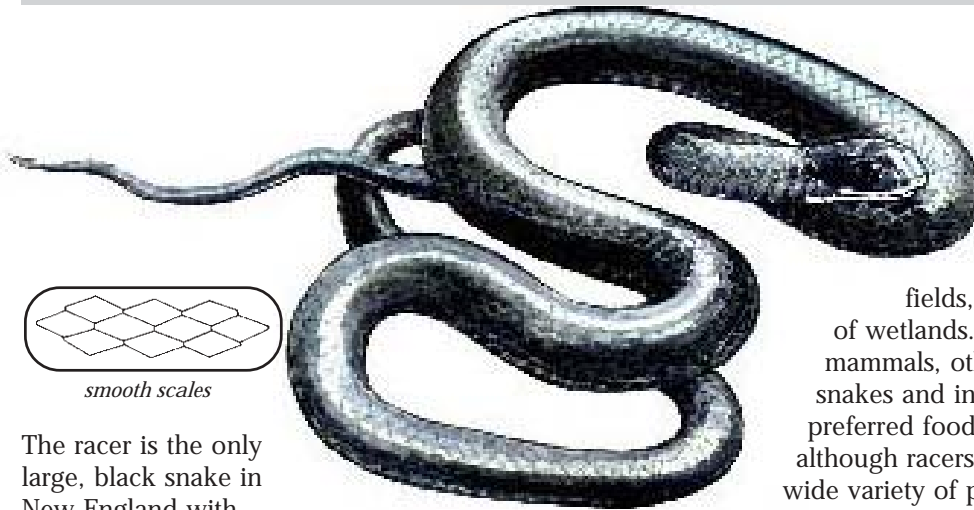
found under rocks and logs, but are often underground. Worm snakes are intolerant of dry conditions and often disappear from areas that have been cleared of vegetation. During the summer, they burrow deep into the ground or seek shelter under rocks or in rotting stumps or logs, and remain inactive until conditions improve. In hand, worm snakes will use their heads and hard pointed tails to probe, as if burrowing, for an escape route. They rarely bite but do produce a pungent odor from their anal glands.

Black Racer

Coluber constrictor (36-60", up to 73")

mulch piles or rotting logs. Eggs laid in June or July normally hatch in August and September.

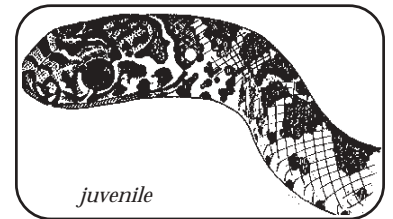
Black racers are common snakes that utilize a variety of habitats including rocky ledges, pastures, overgrown fields, dry or moist woodlands and the edges of wetlands. Small mammals, other snakes and insects are preferred food items, although racers take a wide variety of prey. They will even feed on young of their own species. Active primarily during the day, racers are commonly seen as they bask on shrubs, rocks, ledges and roads, and are tolerant of summer temperatures that would drive other snakes to seek shelter. Aptly named, racers are very fast and typically flee from danger. However, once cornered they put up a vigorous fight, biting hard and often. Rattling their tails among dry leaves, racers can sound convincingly like rattlesnakes. If captured they are difficult to handle and will writhe, defecate and spray musk in an attempt to escape.



smooth scales

The racer is the only large, black snake in New England with smooth scales. Its chin, throat and jaw are white or gray and the belly is generally dark (gray, bluish, or black) from the throat back. Smooth scales give this snake a silky or satin-like appearance. A juvenile racer is gray with large brown, black or reddish blotches down the back, small spots along the sides and large dark eyes. The pattern fades with age, disappearing when the snake reaches 25-30 inches in length.

Racers mate in the spring, and females deposit 10-12 eggs in small mammal burrows, under rocks or logs, or in



juvenile

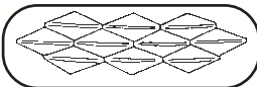
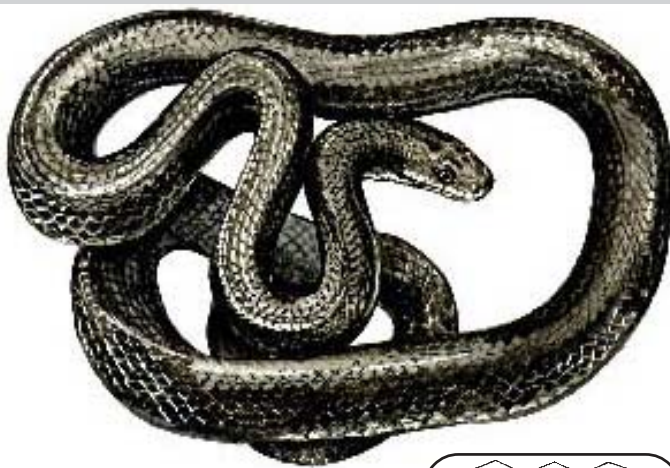
Black Rat Snake

Elaphe obsoleta (42-72", up to 101")

A juvenile rat snake is gray with light spots running down the middle of the back, and has white eyes. This pattern darkens with age and is generally undetectable once the snake reaches a length of three feet.

Mating generally takes place in the spring, with 10-14 eggs laid in June or July. Eggs deposited beneath rocks or in manure piles, rotting vegetation, stumps or logs generally hatch in August and September.

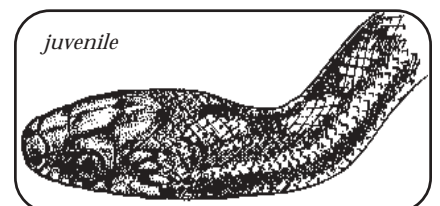
Exceedingly rare in Massachusetts, black rat snakes have been found only in the Connecticut Valley and southern Worcester County, where they occupy rocky ledges and forested hillsides. Mammals, birds and bird eggs make up the bulk of their diet and rat snakes will readily climb trees to raid bird and squirrel nests. Young rat snakes feed on frogs and other small prey. Black rat snakes readily bask in the open during spring and fall. Although they are not particularly aggressive, they may bite, defecate or spray musk when handled. Tail rattling may lead some people to mistake them for rattlesnakes.



keeled scales

Status: "Endangered." Illegal to harass, kill, collect or possess.

Our largest snake, the black rat snake can reach a length of eight feet, but is usually much smaller. The adult snake is black with a white or creamy yellow chin and throat. In contrast to the black racer, the belly of a rat snake is a mixture of light and dark, giving a somewhat mottled appearance. Light areas are often apparent between scales, and the scales on the back are weakly keeled.



juvenile

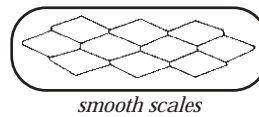
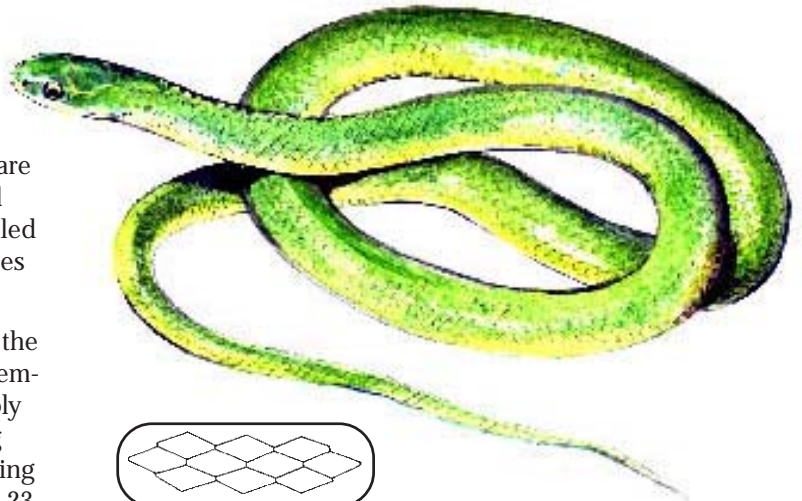
Smooth Green Snake

Opheodrys vernalis (12-20", up to 26")

Unpatterned and green above, white to pale yellow below, the smooth green snake is difficult to confuse with any other snake in Massachusetts. Young snakes are dark olive or blue-gray in color and could be confused with young black racers except that racers have a mottled pattern when young. The smooth green snake has scales that are not keeled.

Green snakes emerge in April or May and mate in the late spring or summer. Eggs are laid from June to September, perhaps in two clutches of 4-6 eggs. Females probably incubate the eggs inside their bodies before depositing them in rodent burrows, sawdust piles, mounds of rotting vegetation or rotting logs. As a result, the eggs hatch 4-23 days after they are laid, a short period of time relative to other snakes.

Areas that support a ground cover of thick green vegetation are the preferred habitats of green snakes. Fields, wet meadows, bogs, marsh edges and open woodlands provide the kind of concealment cover required by these small snakes. Active during the day, green snakes

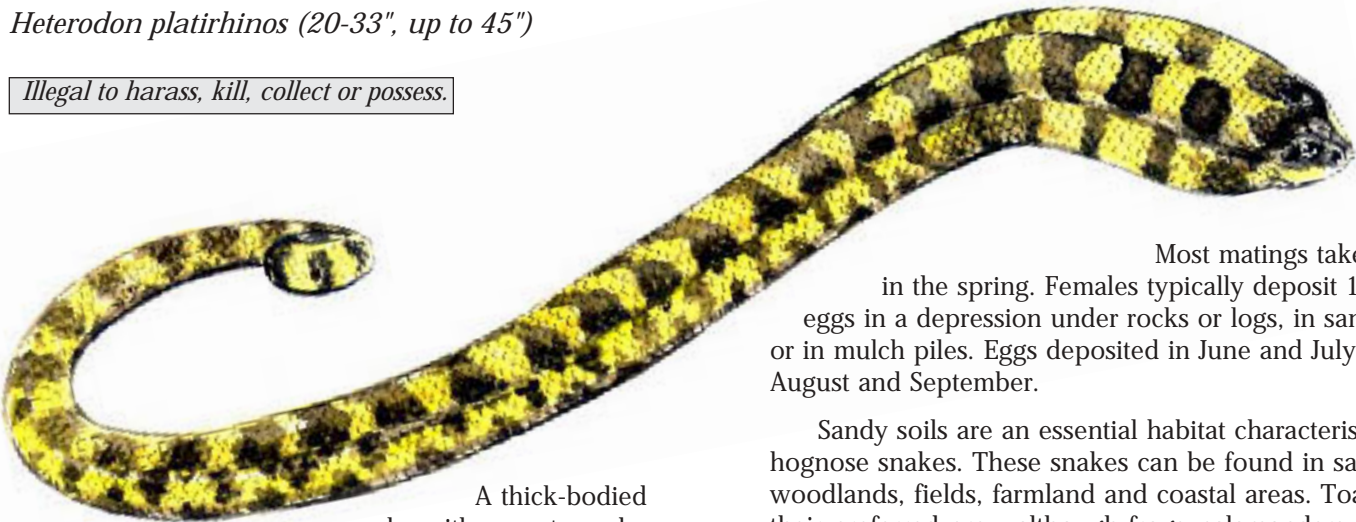


feed on a variety of arthropods (crickets, grasshoppers, caterpillars, beetles, spiders, centipedes and millipedes). Green snakes rarely bite when handled and when they do, rarely break the skin. If handled roughly enough they will, like other snakes, exude a foul substance from their anal glands.

Eastern Hognose Snake

Heterodon platirhinos (20-33", up to 45")

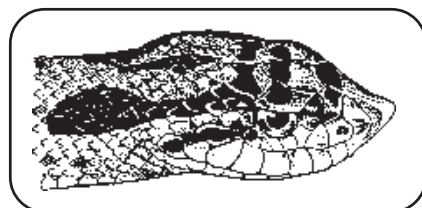
Illegal to harass, kill, collect or possess.



A thick-bodied snake with an upturned snout, the hognose snake is extremely variable in appearance. Generally a well-patterned snake, its background color can be yellow, gray, pinkish brown, olive or black, patterned with large rectangular spots down the middle of the back alternating with dark spots on each side. Occasionally the pattern is obscured by overall dark coloration.

Individuals of this species may appear all black.

Body scales are keeled and the underside of the tail is usually lighter than the rest of the belly.



Most matings take place in the spring. Females typically deposit 15-25 eggs in a depression under rocks or logs, in sandy soil, or in mulch piles. Eggs deposited in June and July hatch in August and September.

Sandy soils are an essential habitat characteristic for hognose snakes. These snakes can be found in sandy woodlands, fields, farmland and coastal areas. Toads are their preferred prey, although frogs, salamanders, small mammals, birds and invertebrates are also taken. Hognose snakes appear to be immune to poisons produced by toads, and are equipped with large teeth in the back of their mouths, apparently to puncture inflated toads so that they may be more easily swallowed. Many of these harmless snakes are killed by people who are convinced that they are venomous and dangerous. When confronted, the hognose snake will suck in air, spread the skin around its head and neck like a cobra, hiss, and lunge as if to strike. Despite this rather convincing show, hognose snakes almost never bite. They will often feign death if provoked enough.

Milk Snake

Lampropeltis triangulum (24-36", up to 52")

A boldly patterned snake, the milk snake has a light gray to tan body covered with reddish-brown blotches bordered in black. Larger blotches on the back alternate with smaller ones on each side. The head is patterned, usually with a light colored "Y" or "V" within a reddish-brown patch. Smooth scales give this attractive snake a shiny or glossy appearance. The belly is patterned with an irregular checkerboard of black on white. Similarity of patterns causes some to confuse it with the copperhead; however, the copperhead lacks any pattern on the head. Tail rattling may also lead some to mistake it for a rattlesnake, although the two species look quite different.

Mating generally occurs in May, with females depositing 3-24 eggs in June and July. Eggs are deposited under rocks, boards or other debris, in rotting vegetation, stumps or logs, or small mammal burrows, and usually hatch in August and September.

Woodlands, fields, rocky hillsides and borders of wetlands provide natural habitat for milk snakes. They are also commonly found around houses, barns and outbuildings. Small mammals are the preferred prey of milk snakes, who are able to enter burrows and consume young in their nests. Milk snakes routinely eat other snakes, and may also take birds and bird eggs, frogs, fish, earthworms, slugs and



insects. Primarily nocturnal, milk snakes can be found during the day under rocks, logs, or other cover. Although they are not very aggressive, milk snakes will bite and spray musk if handled.

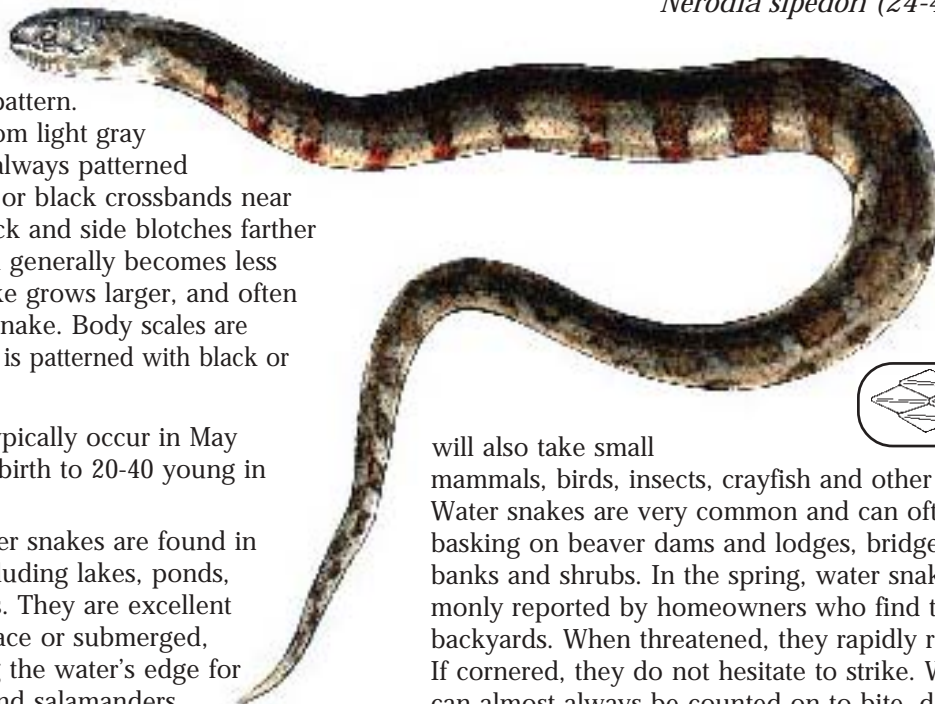
Northern Water Snake

Nerodia sipedon (24-42", up to 55")

This thick-bodied snake is quite variable in color and pattern. Background color ranges from light gray to dark brown. It is almost always patterned with reddish-brown, brown or black crossbands near the head and alternating back and side blotches farther down the body. The pattern generally becomes less noticeable as the water snake grows larger, and often results in a uniformly dark snake. Body scales are strongly keeled and the belly is patterned with black or orange crescents.

Courtship and mating typically occur in May and June, and females give birth to 20-40 young in August and September.

True to their name, water snakes are found in a variety of wet habitats including lakes, ponds, rivers, streams and wetlands. They are excellent swimmers, both on the surface or submerged, and commonly forage along the water's edge for prey. Fish, frogs, tadpoles and salamanders make up the bulk of their diet, though they



will also take small mammals, birds, insects, crayfish and other invertebrates. Water snakes are very common and can often be found basking on beaver dams and lodges, bridge abutments, banks and shrubs. In the spring, water snakes are commonly reported by homeowners who find them in their backyards. When threatened, they rapidly retreat to water. If cornered, they do not hesitate to strike. Water snakes can almost always be counted on to bite, defecate and spray a particularly foul-smelling musk when handled.

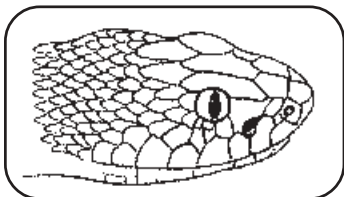
Copperhead

Agkistrodon contortrix (24-36", up to 53")

Status: "Endangered." Illegal to harass, kill, collect or possess.

The copperhead is a **venomous snake** with a broad triangular head, vertically elliptical pupils and a heat sensitive pit between each eye and nostril. The body is pinkish to grayish brown with brown or reddish-brown crossbands that are narrow on the back and widest on the sides. Small dark spots commonly occur between crossbands on the back. The unpatterned head is dull orange, copper or rusty-red. Body scales are keeled and the belly is pink or light brown with dark blotches along the sides. When young, a copperhead has a yellow-tipped tail.

Mating takes place in spring and fall and females give birth to 4-8 young in August and September. Adult females usually give birth every two years.



Copperheads prefer rocky, forested hillsides and wetlands for habitat. Wet areas are particularly sought out in the hot summer months. Small mammals and frogs



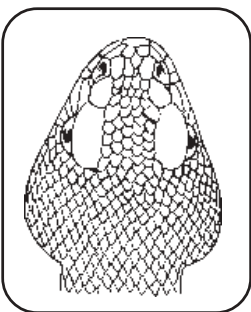
account for most of the prey items taken, but birds, insects and other snakes are also important parts of their diets. When approached, they will either move away quietly or lay motionless, relying on camouflage to protect them. Occasionally, they will vibrate their tails. Bites usually occur when people unknowingly step on or touch unseen snakes. Despite the venomous nature of copperhead bites, they are rarely fatal. In Massachusetts, copperheads are so rare and reclusive that people almost never encounter them.

Timber Rattlesnake

Crotalus horridus (36-60", up to 74")

Status: "Endangered." Illegal to harass, kill, collect or possess.

A robust, **venomous snake**, the timber rattler is equipped with a broad triangular head, vertical pupils and heat sensitive pits. The body color may be yellow, gray, dark brown or black, with dark, V-shaped crossbands across the back. The pattern may not be obvious if the body is very dark. The head is usually unpatterned and is covered with many small scales. A distinct rattle on the end of a darkly colored tail produces a buzzing sound when vibrated. When young, the rattlesnake has only a small button on the tail. Body scales are strongly keeled and the light colored belly is flecked with dark spots.



Mating usually occurs in summer or fall. Females incubate eggs within their bodies by basking, and give birth the following year to 6-10 young from mid-August through September. Female rattlesnakes typically give birth every two or three years.

Although rocky forested hillsides with southern exposures are essential as winter habitat, rattlesnakes prefer dense forests with a thick understory for



foraging. They bask during the day and forage at night, when prey is most abundant. Rattlesnakes prey on a variety of warm-blooded animals, including: mice, chipmunks and other squirrels, rabbits, shrews, moles, weasels and birds. Occasionally, rattlesnakes will also feed on insects, amphibians and other snakes. When threatened, they vibrate their tails to produce a loud buzzing sound that is difficult to miss. They are not particularly aggressive and bites are rare. In Massachusetts, rattlesnakes are so rare that they are almost never encountered by people.

► (**SNAKES AND PEOPLE** continued from page 7)

snake does not present itself, it may be lured out by the warmth of a heating pad or a sunlamp shining on a damp towel (but beware of the fire hazard!) It can also be trapped by placing “glue boards” (normally used for rodent control and available at hardware and agricultural stores) against walls in an area that the snake is likely to cross. Glue boards should be checked daily; cap-

tured snakes can be released unharmed with a little help and an application of common cooking oil.

There are no safe, effective snake repellents capable of keeping snakes away from yards or pools. However, if snakes are inhabiting small, confined areas — such as that crevice behind the front steps — a few tablespoons of naphthalene (“moth balls”) may temporarily drive them out so that the entrance can be sealed.

PROTECTION OF SNAKES

All snakes receive some protection under the Fisheries and Wildlife Laws and Regulations of the state of Massachusetts. They are protected as important members of our native wildlife communities and as valuable natural resources. None of them may be taken from the wild for purposes of sale. To report any violations of our wildlife laws, call toll free: 1-800-632-8075.

Our rare snakes are stringently protected under the laws and regulations already mentioned, as well as under the Massachusetts Endangered Species Act. Four species are involved: the worm snake, black rat snake, copperhead and timber rattlesnake. None of these may be collected, killed or held in possession except under special permit. (Although it is not presently listed under the Massachusetts Endangered Species Act, the hognose snake is also specifically protected from killing, collection and possession.) The penalties for killing, collecting, possessing or even harassing these species — some of which have declined dramatically due to illegal collection — can range

as high as a \$5,000 fine and/or imprisonment for 180 days. In addition, anyone killing an endangered species may be required to make a restitution payment of \$2,000 per animal. The Commonwealth is very serious about protecting the priceless natural heritage these animals represent to present and future generations. If you observe one of these rare snakes in Massachusetts, report it to the Natural Heritage and Endangered Species Program, (508) 792-7270.

Common species may be hunted, trapped or captured up to a possession limit of two. This “loophole” was deliberately left open so that budding biologists and snake enthusiasts could capture and study a few of the animals if they wished. However, many snakes do not adapt well to captivity. Curiosity can generally be satisfied through a few days of observation, after which the snake should be released in the same place it was found. It is illegal to transport and release (“translocate”) any wild animal in Massachusetts. Although it is not illegal to kill common snakes, there is generally no reason for anyone to do so.

PROTECTED SNAKES

It is illegal to harass, kill, collect or possess the following snakes in Massachusetts:

**Timber Rattlesnake • Copperhead • Eastern Hognose Snake
Black Rat Snake • Worm Snake**

SNAKE IDENTIFICATION GUIDE

SOLID OR PLAIN COLORED SNAKES..... PAGE 16-17
STRIPED SNAKES PAGE 18
CROSS-BANDED OR BLOTCHED SNAKES PAGE 18-19

IF THE SNAKE YOU WANT TO IDENTIFY IS A:	THEN IT IS A:
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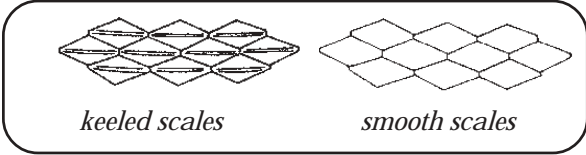
SOLID OR PLAIN COLORED SNAKES

- ▶ Green snake with a light belly; uses a variety of habitats, usually with abundant ground cover; moderately common (12-20", up to 26")
- ▶ Small, dark gray to black snake with a complete yellow ring around the neck, yellow belly and smooth scales; occasionally found in basements; common (10-15", up to 27")

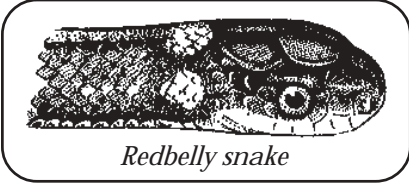


▶ **Small brown snakes**

- ▶ Shiny brown snake with smooth scales, pink belly, tapered head and tail, and small eyes; prefers sandy soil; rare; Southern Connecticut Valley (7-11", up to 13")



- ▶ Small brown snakes with keeled scales
 - Grayish brown to dark brown snake with cream to pink belly and rows of small dark spots on back and belly; common in residential areas (9-13", up to 20")
 - Gray or brown snake with orange or red (rarely yellow) belly and three light spots around the neck; usually found in moist woodlands or near wetlands; moderately common (8-10", up to 16")



- ▶ *Smooth green snake, page 12*
- ▶ *Ringneck snake, page 9*
- ▶ *Worm snake, page 10*
- ▶ *Brown snake, page 10*
- ▶ *Redbelly snake, page 9*

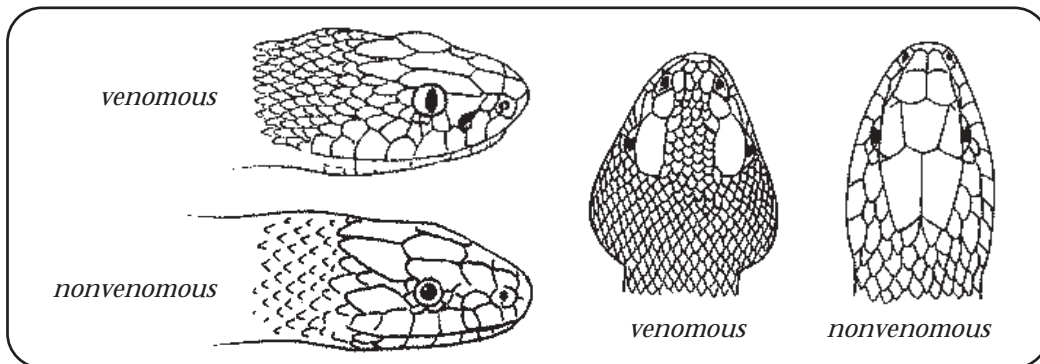
(SOLID OR PLAIN COLORED SNAKES continued on next page)

(SOLID OR PLAIN COLORED SNAKES continued)

➤ **Medium to large, black or dark brown snakes**

- Thick-bodied black snake with a large, triangular head, vertical and elliptical pupils (eyes), a pit on each side of the head between the nostril and the eye and a distinct rattle on the end of the tail; cross-banded pattern may be faint or absent; typically found on forested hillsides; rare, venomous (36-60", up to 74")

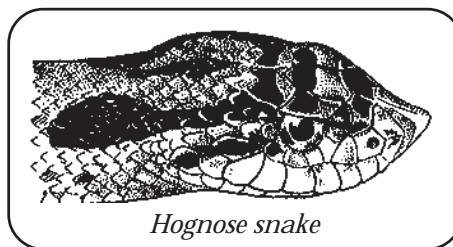
- **Timber rattlesnake**, page 14 (also see cross-banded snakes)



➤ Head small and oval with round pupils and no pits, nonvenomous

- Slender, silky black snake with smooth scales, dark belly and white chin; uses a variety of habitats; common (36-60", up to 73")
- Chunky black snake with keeled scales, mottled light and dark belly and white or cream colored chin; typically found on forested hillsides; rare; Connecticut Valley (42-72", up to 101")
- Thick-bodied black snake with keeled scales and an upturned snout, that usually spreads its head and neck and hisses when confronted, resembling a cobra; cross-banded pattern may be faint or absent; prefers open, sandy areas; uncommon (20-33", up to 45")

- **Black racer**, page 11
- **Black rat snake**, page 11
- **Eastern hognose snake**, page 12 (also see cross-banded snakes)



Hognose snake

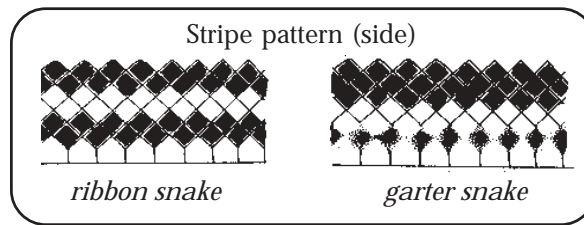
- Thick-bodied dark gray, dark brown or reddish brown snake with strongly keeled scales and a light belly with orange or black crescent shaped markings; cross-banded pattern may be faint or absent; typically found near water; common (24-42", up to 55")

- **Northern water snake**, page 13 (also see cross-banded snakes)

STRIPED SNAKES

➤ Slender snake with a long tail and brilliant stripes, distinct dark stripes separate belly from yellow side stripes; often associated with wetlands; moderately common. (18-26", up to 38")

➤ Snake not particularly slender, with either distinct yellow stripes or a more checkered appearance and no bold dark stripes between belly and sides; uses a variety of habitats; very common (18-26", up to 48")



➤ *Eastern ribbon snake, page 8*

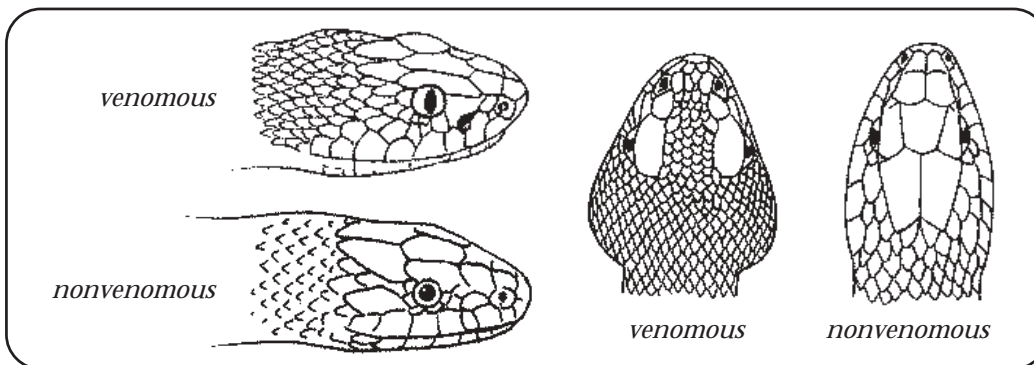
➤ *Common garter snake, page 8*

CROSS-BANDED OR BLOTCHED SNAKES

➤ Head large and triangular with a pit on each side between the nostril and eye, and vertical, elliptical pupils (eyes); keeled scales, venomous

➤ Pinkish to orange-brown snake with dark saddle or dumbbell shaped crossbands that are narrow on the back and wider on the sides, and an unpatterned, copper to rust-red head; typically found on forested hillsides; rare (24-36", up to 53")

➤ *Copperhead, page 14*



➤ Thick-bodied gray, yellow or dark brown snake with dark V-shaped markings across the back and a distinct rattle on the end of the tail; cross-banded pattern may be faint or absent; typically found on forested hillsides; rare (36-60", up to 74")

➤ *Timber rattlesnake, page 14 (also see solid or plain colored snakes)*

➤ Head small and oval with round pupils and no pits, nonvenenous (see next page)

(CROSSBANDED OR BLOTCHED SNAKES continued on next page)

(CROSS-BANDED OR BLOTCHED SNAKES continued)

➤ **Head small and oval with round pupils and no pits**

➤ Gray snake with red or reddish-brown blotches bordered in black on the back and sides, smoothscales, and a black and white checkered belly; head is patterned, usually with a light V or Y-shaped mark; often found around houses and barns; common (24-36", up to 52")

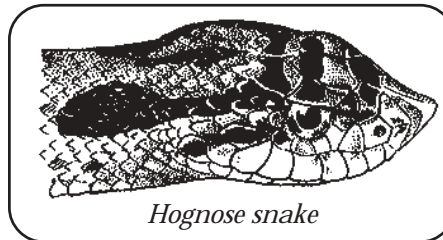


➤ **Milk snake, page 13**

➤ Thick-bodied gray or brown snake with burnt-orange or reddish-brown crossbands on the back, often alternating with squarish blotches on the sides, strongly keeled scales and a light belly marked with paired orange crescents; cross-banded pattern may be faint or absent; typically found near water; common (24-42", up to 55")

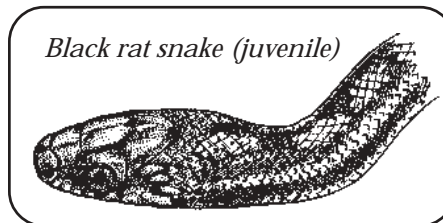
➤ **Northern water snake, page 13 (also see solid or plain colored snakes)**

➤ Thick-bodied, gray, yellow or black snake with rectangular dark blotches down the back alternating with dark spots on each side and an upturned snout that usually spreads its head and neck and hisses when confronted, resembling a cobra; cross-banded pattern may be faint or absent; prefers open, sandy areas; uncommon (20-33", up to 45")



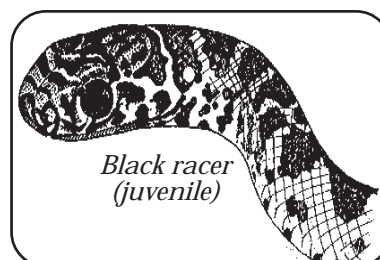
➤ **Eastern hognose snake, page 12 (also see solid or plain colored snakes)**

➤ Small dark gray snake with lighter spots running down the back, keeled scales and white eye ring; typically found on forested hillsides; rare; Connecticut Valley or southern Worcester County (pattern disappears with age)

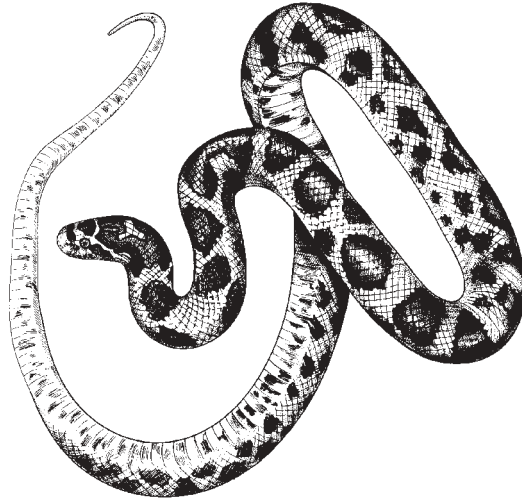


➤ **Black rat snake (juvenile), page 11 (also see solid or plain colored snakes)**

➤ Small gray snake with dark gray, brown or reddish blotches down the middle of the back and smaller dark spots on the sides and belly, smooth scales, and large dark eyes; uses a variety of habitats (pattern disappears with age)



➤ **Black racer (juvenile), page 11 (also see solid or plain colored snakes)**



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The Audubon Society Field Guide to North American Reptiles and Amphibians by John L. Behler. Alfred A. Knopf, Inc., New York. 1979.

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