

SNAKES AND LIZARDS OF MINNESOTA





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Snakes and Lizards of Minnesota

INTRODUCTION

Throughout time, snakes have caused fear in many people, while evoking awe in others. Either way, snakes are often misunderstood and under-appreciated. In fact, many people kill snakes simply because they fear and dislike them, and don't understand what snakes contribute to our world.

This human persecution has led to the decline of many snake species, including those found in Minnesota. Fear of snakes is a learned behavior, and is often heightened by media misrepresentation and sensationalism. As we learn more about snakes and their benefits, our willingness to coexist with them increases.

Like snakes, lizards are often unappreciated and somewhat feared by people in the upper Midwest simply because they are so unfamiliar. This lack of direct and indirect experience with lizards

is understandable in Minnesota, since we only have three lizard species, and all have a very short active season.

General Biology

Minnesota has seventeen snake species, two of which are rattle-snakes, and three lizard species. Snakes and lizards are classified as reptiles, which are characterized by having scaly skin and being *ectothermic* (cold-blooded). Because the body temperature of these animals is largely controlled by the temperature of their surroundings, they are typically only active in Minnesota from April through late October. During the winter, they move underground, below the frost line, and become inactive, or hibernate.

Once snakes and lizards emerge from hibernation in spring, they generally will move away from dens or other overwintering areas to hunting areas, where they will

spend most of the active season. In fall, snakes and lizards move back to their wintering areas, or *hibernacula*. This “migratory” behavior is more common with Minnesota’s snakes than lizards. May is the peak time for spring movements and September for fall movements, making them the peak months for most snake-human encounters. However, the peak encounter time for timber rattlesnakes in Minnesota is July through August.

In addition to seasonal active periods, snakes and lizards also have daily activity patterns. Many snakes and lizards are diurnal, being active during the day, particularly in spring and fall when temperatures are cooler. During the summer,

many snakes and lizards, particularly those that live in dry, sandy or rocky habitat, become nocturnal, where they are active primarily at night, or *crepuscular*, where they are active primarily at dawn and dusk. This change in daily activity period allows ectothermic animals, such as snakes and lizards, to avoid overheating during the extreme temperatures of summer days.

A few key differences between snakes and lizards relate to their anatomy. Minnesota’s lizards have legs, external ear openings, and eyelids, while snakes lack all of these features. Instead of eyelids, snakes have clear scales, called spectacles, which cover and protect their eyes.



Erica Hoagland



Carol Hall

Skin

One common misconception about snakes and lizards is that they feel slimy. On the contrary, they have dry, scaly skin which can often feel rough. Reptile scales are made of keratin, the same material as human fingernails. Scales help snakes and lizards retain moisture, protect their bodies from wear and tear from their sometimes harsh environments, and provide colors and patterns that may allow them to blend in with their natural surroundings (cryptic coloration). Scales also help snakes move as they crawl and climb. Scales can be smooth or keeled (Figure 1), having a ridge along the centerline similar to the pointed keel of a boat. In some species, scales are modified to form different structures, such as a rattlesnake's rattle.

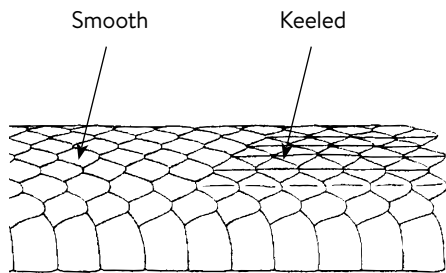


Figure 1. Scale comparison.

Snakes and lizards shed their scales, or skin, as a way to allow for growth, keep their bodies free of mites and other parasites, and to replace old, worn skin. Skin can be shed in one piece, which typically occurs in snakes, or it can flake off, which is more common in lizards. Snakes shed their skin by rubbing their nose on a rock or some other rough surface to break the skin. They then crawl out of the old skin, leaving the shed skin inside out (Figure 2). Freshly shed snakeskins can be used to identify different species because you can often still see the pattern and scale composition. Young snakes and lizards shed more frequently than adults, sometimes two to three times during the active season. However, once they reach maturity, shedding typically occurs only once or twice per year.

Shedding typically occurs once or twice per year.



Figure 2. Plains gartersnake starting to shed skin.

James Gerholdt

Prior to shedding, the skin appears faded and dull, especially with snakes. Because snakes shed the scale covering each eye, their eyes may appear milky as the scales loosen (Figure 3). Snakes are particularly vulnerable during this time due to their vision being impaired, and they may behave more defensively when encountered. After shedding, the animal's skin color and patterning are bright and clear, and may even appear glossy.

The number, shape, color and patterning of scales can vary considerably between species, and often within a species. There can be differences in patterns and colors among geographic regions as well as at a more local level. Colors and patterns can also change as the animal matures. For

example, hatchling North American racers have blotched patterning, somewhat similar to a milksnake. Once the racers are about three years old, they will have developed typical adult coloration of solid slate gray or blue on their back, with a yellow underside.

Skin variations can make identification challenging; however, each species has a scale composition (color and/or pattern) that is typically characteristic for that species (Figure 4).

The dorsal pattern on the backs of snakes and lizards is one characteristic used for identification. These patterns can be in the form of blotches, vertical lines/stripes running from head to tail, horizontal bars/bands running across the body,



Figure 3. Gophersnake prior to shedding. Notice opaque, milky color of eye.

Erica Hoaglund



Minnesota DNR.

Figure 4. Snake skin patterns left to right: blotched (milksnake), lined or striped (gartersnake), banded (timber rattlesnake).

or no pattern (solid). Some snakes have patterns on their belly that are used for identification. These patterns include a checker board, a series of half moons, or solid.

The anal plate is often used in snake identification. It is a scale that covers a snake's vent, the opening used for excretion as well as reproduction.

The anal plate is either singular or divided in snakes (Figure 5).

In some snake species, the number of scale rows and placement of patterns or colors on these rows can be a key characteristic for identification. This can be difficult to determine and is typically used more by professional herpetologists.

Divided anal plate Divided ventral scales Single anal plate Single ventral scales

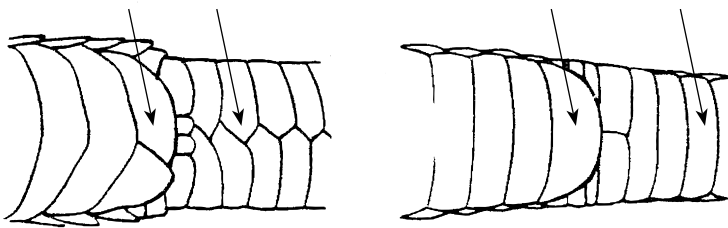


Figure 5. Some snakes have a divided anal plate, while others have a single anal plate. In Minnesota, the ventral scales on the tails of venomous snakes are singular, whereas nonvenomous snakes have divided ventral tail scales.

Venomous Verses Nonvenomous Snakes in Minnesota

Many people believe that some of Minnesota's snakes are poisonous. This is not accurate. Poison is generally ingested and intended to ward off or kill predators whereas, venom is a type of toxin that is injected into prey to help subdue and/or kill it prior to consumption. Minnesota's rattlesnakes are considered venomous, rather than poisonous, because they deliver their venom by injection, and their flesh is not poisonous to another animal if it is eaten.

Minnesota has two venomous snakes, both of which are rattlesnakes. There are several characteristics that differentiate our rattlesnakes from our 15 nonvenomous snake species. Our two rattlesnakes have segmented tails, while our nonvenomous snakes have tails that taper to a point (Figure 6).

Eyes also differ between the two groups. Rattlesnakes have elliptical, or cat's eye pupils, but our nonvenomous species have round pupils (Figure 7). A third difference relates to the scale pattern on the ventral tail surface. Minnesota's rattlesnakes have single ventral scales on their tail, whereas, our nonvenomous snakes have divided ventral scales on their tail (Figure 5).

Both of Minnesota's rattlesnakes are called pit vipers because they have a set of *loreal* or heat-sensing pits located between their eyes and nostrils (Figure 7). Nonvenomous snakes in Minnesota lack these pits. Lastly, our rattlesnakes have triangular-shaped heads that are noticeably wider than their necks, while our nonvenomous snakes have rounded heads that are essentially the same width as their necks. (Figure 8.) Several of these differentiating characteristics



Jaime Edwards

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Figure 6. Segmented timber rattlesnake tail (left) and pointed gophersnake tail (right).

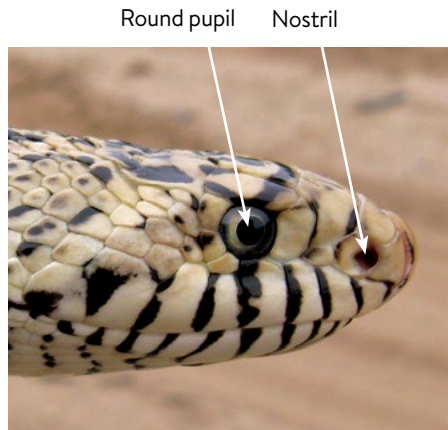
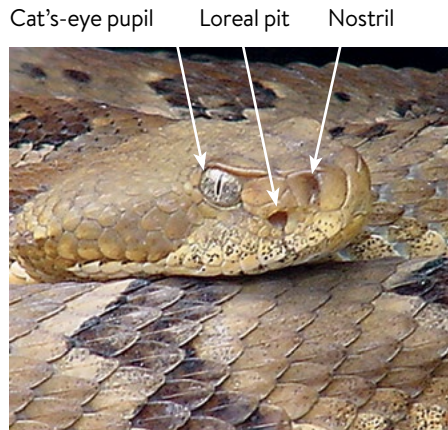
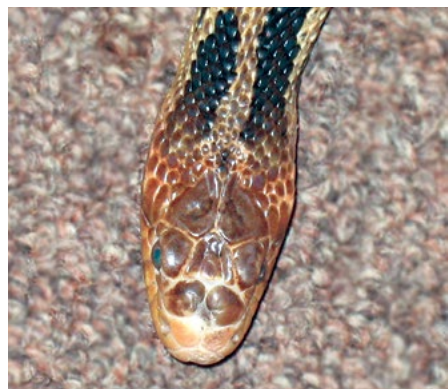


Figure 7. Comparison of venomous, timber rattlesnake's head (left) to a nonvenomous gophersnake's head (right).



Triangular head shape



Rounded head shape

Figure 8. Top view comparison of venomous timber rattlesnake's head (left), to a nonvenomous western foxsnake's head (right).

require close views of the animal. It is not recommended that you get close enough to a snake to make these observations. If you do not recognize a snake that you encounter, be safe. Leave the snake alone, slowly back away, and if you need to pass the snake, stay at least 6 feet away.

Feeding

Snakes and lizards have a wide range of feeding habits. All snakes are carnivores (meat-eaters), consuming anything from insects to small mammals. Lizards, on the other hand, can be herbivores (plant-eaters) or carnivores. All of Minnesota's lizards are carnivorous, eating primarily insects.



Figure 9. Plains hog-nosed snake. Forked tongue.



Figure 10. Plains hog-nosed snake's glottis.

Lizards are considered to be active foragers, and typically use their eyesight when searching for a meal. Once they locate prey, they simply grab it and eat it. In contrast, snakes use a variety of methods to locate and capture their food.

A snake's tongue (Figure 9) plays an important role in finding prey. Snakes use their tongues to collect chemical cues from their surroundings, which are then transferred to a gland in their mouth called a Jacobson's organ. This organ then sends information to the snake's brain to help determine if an item is food or not.

Minnesota's rattlesnakes have an additional characteristic that helps in finding prey; their loreal pits (Figure 7). These are heat-sensing pits located between their eyes and nostrils, and allow a snake to sense heat given off by warm-blooded animals such as mice.

Snakes capture their food in different ways. Some snakes are active foragers, similar to lizards, which visually search for and capture prey by grabbing and swallowing it. A snake's inward pointing teeth allow it to hold on to live prey and move it down its throat.

Some snakes use constriction to immobilize their meal before they eat it. Snakes using this method will seize the animal with their jaws and wrap their body around it to hold it as they swallow it. The pressure a snake can exert is often enough to suffocate the prey.

Another capture method is one in which venom is injected. Minnesota's rattlesnakes use an ambush hunting style in which they lie in wait for an opportunity to grab prey and inject venom. The animal is then released and continues for a short distance before it succumbs to the rattlesnake venom.



Tom R. Johnson

Figure 11. Western ratsnake eating prey.

The rattlesnake uses its loreal pits to track its prey for consumption, now that the prey's claws and teeth no longer pose a threat to the rattlesnake. The venom of Minnesota's rattlesnake species have digestive enzymes that help break down the animal's tissue, allowing for easier digestion.

Snakes often eat prey that is much larger than their mouths (Figure 11). They are able to swallow large items because they can move both their upper and lower jaws, allowing their mouths to open very wide. Their bodies also have the flexibility to expand when something large is swallowed. Because some meals fill a significant portion of a snake's mouth, snakes have the ability to extend their windpipe, or glottis (Figure 10), to the edge of their mouth. This allows the snake to breathe in spite of having its mouth full.

Breeding

Minnesota's snakes and lizards reproduce sexually. For lizards, courtship and mating typically occurs in spring, and includes visual displays and posturing. Male lizards in breeding condition often have bright colors that are used for attracting females, as well as for defensive or territorial displays to competing males. About 30-60 days after breeding, the female lizard lays a clutch of leathery eggs in a damp, warm spot. Minnesota's two skink species guard their eggs, but the six-lined racerunner does not.

Juvenile lizards in Minnesota have blue tails (Figure 12) that identify them to adult males as being young, non-breeders. A male lizard will recognize their nonbreeding status and allow them into his territory rather than chase them out or attack them.

Most Minnesota snakes breed upon emergence from hibernation in spring; however, some engage in courtship and mating in fall. Nine of Minnesota's snake species lay eggs (*oviparous*), while the other eight give birth to live young in membranous sacks (*ovoviviparous*) (Figure 13). None of our egg-laying snakes tend their eggs. They excavate a cavity for the leathery eggs in a warm, damp place, deposit them, cover the hole and leave

the site. Similarly, none of our live-bearing snakes are known to actively tend to their young. Some females can be found with their young for up to fourteen days after birth, but it is unclear if they are guarding their young, or simply too exhausted to move away.



Liz Harper

Figure 12. Juvenile six-lined racerunner. Blue tail.



Tom R. Johnson

Figure 13. Eggs hatching and live birth.

Defensive Behaviors

The main defensive technique used by snakes and lizards is to hide. Both use cryptic coloration (Figure 14) to blend into their surroundings, and many will spend time hidden under rocks, vegetation, or other suitable cover.

If a snake or lizard is seen, it may employ a variety of defensive behaviors. Lizards, and some snakes, are very fast, and when seen, will often dash away to cover. Sometimes a lizard will stand its ground and try to bluff a predator by inflating its body to make it appear bigger, and doing a series of quick push-ups. Many lizards have bright colors on the sides of their bodies that “flash” as they perform these quick movements, which may serve to scare away a predator.



Figure 14. Cryptic coloring of timber rattlesnake.

Minnesota’s three lizards also have the ability to lose a portion of their tail when threatened (Figure 15). When the tail breaks off, it continues to wiggle, distracting the predator and enabling the lizard to escape. A new tail will regenerate, but it won’t be as long as the original, and it will take a long time to

Snakes will use bluff tactics to scare a predator.

regrow. Some lizards can employ this technique multiple times. Snakes will also use bluff tactics to scare a predator. This may include inflating their bodies and raising their heads off the ground in a strike position. A snake may or may not strike, and will sometimes make a “bluff” strike where it doesn’t open its mouth. A western foxsnake can inflate its head to make it appear larger and more triangular-shaped, like a timber rattlesnake head, and will often behave aggressively by



Figure 15. Prairie skink that has lost its tail.

striking repeatedly. Some snakes, like the gophersnake, will hiss to scare off predators. Others, like the eastern gartersnake, will use odor and bodily excretions. Both the eastern and Plains hog-nosed snakes have an elaborate defensive display in which they flatten their head and posture their body to make themselves look like a cobra (Figure 16). If agitated enough, they will then roll onto their back and play dead. If that doesn’t work, they will regurgitate food and excrete feces and a bad odor from their vent.

Rattlesnakes use their rattle to alert predators. Nonvenomous snakes often mimic a rattlesnake if threatened. These “rattlesnake mimics” will shake their tails, and while they do not have a rattle, they can sound like the real thing! Many of these mimics are killed annually by people mistaking them for rattlesnakes.



Figure 16. Eastern hog-nosed snake imitating a cobra.

Venomous Snakebites

One of the greatest fears people have about coexisting with snakes is the potential for a rattlesnake bite. The reality is that most Minnesotans will never encounter a rattlesnake, let alone be struck at or bitten by one. Rattlesnakes are quite uncommon; in fact, the massasauga has not been confirmed in Minnesota for over 50 years. (Many people who encounter the common watersnake mistake it for a massasauga.) The timber rattlesnake is only found in southeastern Minnesota's bluff country; people are highly unlikely to encounter this snake in other parts of the state.

During a 20-year period, from 1982-2002, 31 snake bites from timber rattlesnakes were reported in Minnesota. However, only five of these were considered "legitimate" bites, in which a person inadvertently encountered a rattlesnake and was bitten. The other 26 bites involved captive snakes or people who deliberately handled rattlesnakes, and most victims were under the influence of alcohol. No fatalities due to timber rattlesnake bites were reported during this time frame (Keyler, 2005).

Timber rattlesnakes are generally docile. If they do not feel threatened, they often won't even rattle during an encounter. If they do feel threatened, their first reaction is to try to hide, or flee from the threat. If they are cornered or provoked, they will rattle and may "bluff" strike with a closed mouth. Under continued harassment, they will strike with an open mouth and may bite. Approximately 48 percent of timber rattlesnake bites to humans are "dry" or contain minimal amounts of venom. Venom is used to immobilize prey and takes a lot of energy for a snake to produce. As a result, snakes often don't actively inject venom into a human during a bite.

In Minnesota, dogs and livestock are bitten more frequently by rattlesnakes than are people, but this is still a rare occurrence. An unleashed dog will often investigate novel items in its surroundings, such as a snake, thereby agitating the snake. About half of the timber rattlesnake reports in Minnesota occur after a dog has found the snake. By the time a person figures out what the dog is up to, the snake is often cornered and agitated, giving the

Statistics show there is a greater risk of being bitten if an attempt is made to approach and kill the snake.

impression that timber rattlesnakes are aggressive. Dogs and livestock, including horses, are typically bitten in the face. If venom is injected, it is usually not a fatal dose, but severe swelling is commonly associated with a rattlesnake bite. With a face bite, the biggest threat is suffocation due to swelling of the nasal passages. It is important to obtain medical attention for the animal, to reduce swelling and open breathing passages. Use of antivenom on dogs and livestock is an option, but is often not necessary. Most medium- to large-sized dogs and livestock survive a timber rattlesnake bite.

If you encounter a rattlesnake, or a snake you are unable to identify, do not try to capture or kill it. Statistics show there is a greater risk of being bitten if an attempt is made to approach and kill the snake. The maximum striking distance for a coiled rattlesnake is two thirds its body length; striking distance is less if the snake is not coiled. Therefore, if you have such an encounter, the best thing to do is slowly back away. If you must go past the snake, leave a minimum safe distance of six feet between you and the snake. If you have a dog with you, it is important to get your dog on a leash or under your control until you are well past the snake.

If a person is bitten by a timber rattlesnake, it is important to keep the person as calm as possible and seek medical attention as soon as possible, preferably within one hour. Although timber rattlesnake bites are rarely life threatening, they should always be taken seriously. Rattlesnake bite victims may be treated with antivenom to counteract the effects the venom may have on the body. Not all medical facilities in Minnesota and surrounding states carry antivenom. More information about how to treat a rattlesnake bite, and a list of hospitals that carry the antivenom, can be found on the Minnesota DNR website.



Conservation

Snakes and lizards play a beneficial role in our environment by consuming large numbers of insects and small mammals. Additionally, snakes and lizards are food for other animals, which also helps keep their own numbers in check.

Unfortunately, many people do not appreciate the value of snakes and lizards. As a result, these animals, particularly snakes, are often killed. Human persecution of snakes is one of the largest threats to these animals, especially as people move into more rural areas. For species such as rattlesnakes, which don't reproduce often, increased human-caused mortality severely impacts their populations.

People also impact snake and lizard populations in other, less direct, ways. Habitat fragmentation, degradation, and loss caused by

human development and lack of management are increasing concerns for all of Minnesota's wildlife. As homes and businesses expand, reducing habitat connectivity, snakes, lizards and other wildlife become isolated. As a result, many animals are unable to meet

During spring and fall, some snakes seek out blacktop roads for basking.

their basic needs (food, water, shelter, reproduction opportunities). To survive, they must spend more time looking for food and water, and finding adequate shelter and mates. This

can lead to increased predation, reduced body condition, lack of reproduction, and ultimately, population declines.

Roads often function as travel barriers, where animals simply avoid crossing them, thus reducing habitat availability. Roads are also a source of direct mortality when animals are hit by cars. Snakes "freeze," rather than flee, when they sense the vibrations of approaching vehicles.

During spring and fall, some snakes seek out blacktop roads for basking. These animals become easy targets for people who deliberately swerve to hit snakes seen on roads.

Aside from development, habitat degradation is also a threat. Most

snakes and lizards live in a variety of habitats, though some will live in only one or two kinds. As a result, when some habitat types, such as wetlands and prairies, decline in abundance and quality, impacts are felt by the many animals that depend on these habitats. For example, timber

rattlesnakes den on south and west facing bluffs in southeast Minnesota. Due to lack of fire and grazing, these bluff prairies are being encroached by trees which shade out important habitat not only for rattlesnakes, but also other snake and lizard species. Non-native, invasive plants, are dominating many of our natural communities, decreasing their habitat quality and ability to support many wildlife species. Many of these non-native plants originate from landscape plantings around homes, farms and businesses.

One of the most important things you can do to help Minnesota's snakes and lizards is allow them to live on your property and wherever else you see them.

How Can You Help Minnesota's Snakes and Lizards?

One of the most important things you can do to help Minnesota's snakes and lizards is allow them to live on your property and wherever else you see them. If you see a snake or lizard in

your yard, more often than not, the snake or lizard will move on its way and you will not encounter it again. Take the opportunity to appreciate the animal, as many Minnesotans don't get the chance to see many of our snakes and lizards. Take some pictures and try to identify what species it is, and share your photo with family and friends.

Even if you are fearful of snakes or lizards, taking time to learn about the species in your yard is an opportunity to perhaps decrease your fear, and increase your appreciation for the animal.

You can also manage your land in a snake-and-lizard-friendly manner:

- Stop or reduce your use of insecticides which are ingested by insect-eating lizards and snakes.
- Leave areas of your property in a more wild state by not mowing, or by restoring them to prairie or other native habitat.
- Leave downed logs, brush piles, and rock piles, which provide shelter and food sources for many wildlife species.

- Keep pets, particularly cats, indoors or on a leash when outdoors. Many snakes, lizards, birds and other wildlife are killed every year by cats and dogs.
- Prescribed fires can be conducted in March, late October or November when most reptile species are inactive.
- If you want to attract overwintering snakes, you can construct an artificial overwintering area or *hibernaculum*.

Please don't release any unwanted captive snakes or lizards, even native species, into the wild. Released animals can introduce disease to wild populations, they can out compete and displace native species, and some may be able to interbreed, putting our native populations at risk. If you have a pet reptile or amphibian you no longer want, the Minnesota Herpetological Society has a program for placing such animals in new homes.

You can help Minnesota's snakes and lizards by supporting Minnesota's Nongame Wildlife Program and donating to the Nongame Wildlife Checkoff on your Minnesota state tax form. You can also buy a conservation license plate for your vehicle and/or support other conservation efforts. Many individuals and organizations are working together to protect and manage Minnesota's wildlife, including snakes and lizards.

Managing Unwanted Snakes

Even though snakes are beneficial to have around, you may not want them in or around your home. While there is no foolproof way to prevent snakes from ever entering your yard or home, there are steps you can take to discourage their presence.

Snakes often seek shelter in cool, damp places such as a basement or under a shed. They may also look for overwintering spots that extend below the frost line, which may be provided by a house foundation. To prevent snakes from entering your home through the foundation, all openings ¼-inch or larger should be sealed or covered. For holes that are hard to fill or cover, you can try spray foam that will expand and fill in the smaller nooks and crannies. Also, look for small holes around windows, doors, water pipes, electrical lines, open septic pump drain tiles and other spots that might have space allowing access into your home.

To discourage snakes from entering your yard, keep grass mowed short, move wood piles and other debris away from your house, and keep the area under bird feeders clean so as not to attract rodents. Shrubbery should be trimmed up at the base and not be planted directly against your house. Because snakes will bask on blacktop driveways, you can keep them away from your house by having a concrete apron

by the garage. Snakes can also enter homes through the garage if it is attached to the house. Keep your garage door shut, and make sure there is a good seal between the garage door and floor. Also, seal any holes in garage walls. Some snakes like to lay eggs in compost heaps, so keep your compost area away from the house and not in your garden.

Many people inquire about advertised snake repellents and home remedies for discouraging snakes. Things like moth balls, sulfur, naphthalene, tacky bird repellent, lime, cayenne pepper spray, and creosote have been tested but are not effective in repelling snakes.

For people seriously afraid of snakes, you can put up a fence designed to keep snakes out of your yard or garden. However, some snakes are adept at climbing, so a fence is not a foolproof method. Installing a fence is expensive, but it may help in some situations such as when trying to keep rattlesnakes out of your garden. The fence should be made of ¼-inch galvanized hardware cloth that is at least 36 inches wide. The lower 4–6 inches should be buried in the ground, and the above ground portion should be slanted outward at a 30-degree angle. Fence supports should be on the inside of the fence. If a gate is needed, it should fit tightly and open to the inside. Keep vegetation short on both sides of the fence.

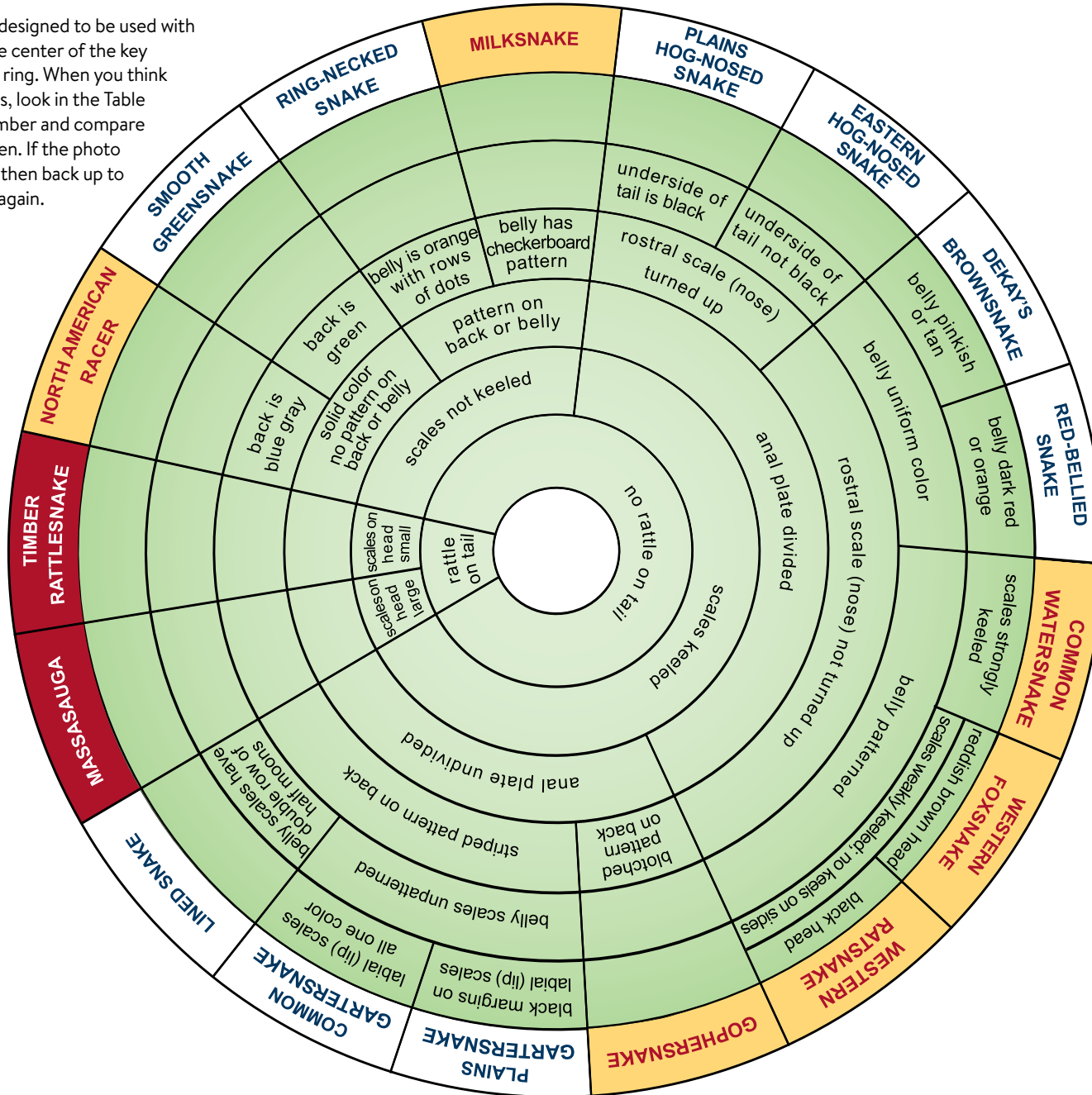
Removing Snakes From a Building

If a snake finds its way into your home, the easiest way to try to get it out is to use a broom and sweep it out a door or into a garbage can that can be carried out. If you cannot reach the snake, you can try to trap it. To trap a snake, you should first try to reduce the size of the area in which the snake is located by closing doors, stuffing towels under doors to seal the space between doors and the floor, or enclose the area somehow, if possible. Next, take a box and cut a hole in the side, flush with the bottom, and about 1- to 2-inches square. Place a damp rag in it. Seal the top of the box shut and note the weight. It should feel light. Set the box near the wall. After several hours, place a piece of cardboard over the opening and turn the box on its side. If you hear or feel movement, you should have a snake inside. With the hole still covered, take the box outside and away from your home. Set the box on the ground and unseal the hole to release the snake. Make sure you seal any holes in your home's foundation to prevent a snake from getting back in.

If you trap a snake in your house during winter, it cannot be released outside because it will die. In this situation, contact a DNR Nongame Wildlife Specialist through the DNR Information Center at 888-646-6367.

KEY TO MINNESOTA'S SNAKES

The keys in this booklet are designed to be used with adult specimens. Start at the center of the key and work towards the outer ring. When you think you have the correct species, look in the Table of Contents for its page number and compare the photo with your specimen. If the photo does not match the species then back up to previous ring in key and try again.



Nonvenomous

Rattlesnake Mimic

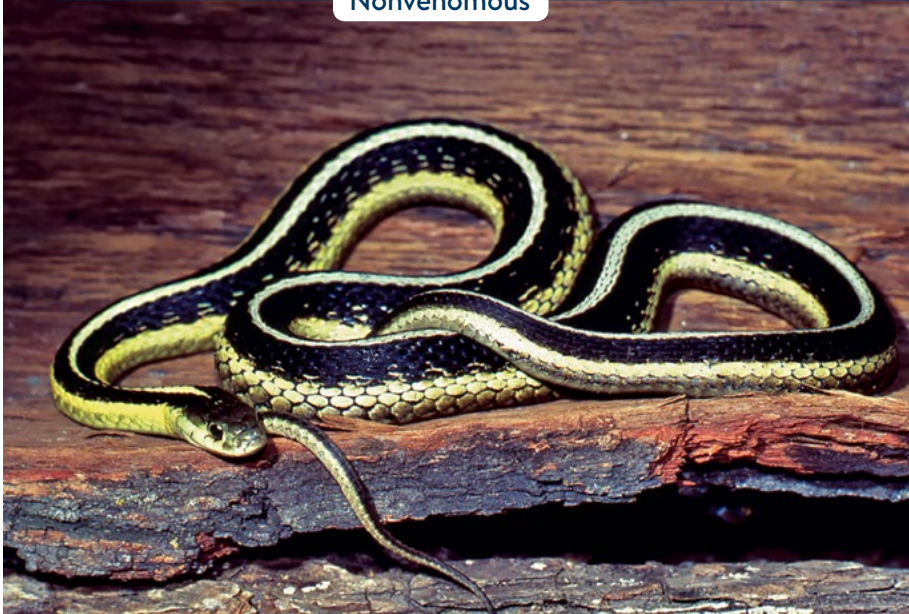
Venomous

Original key concept and design by John Moriarty. Adapted and used with permission.

COMMON GARTERSNAKE

(*Thamnophis sirtalis*)

Nonvenomous



Barney Oldfield

Common gartersnake.

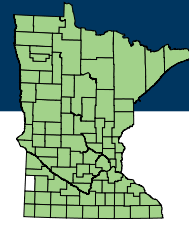


Barney Oldfield

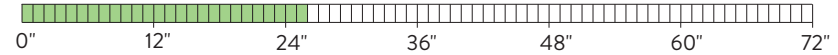
Red-sided gartersnake.

COMMON GARTERSNAKE

Nonvenomous



Status: Not listed



Size: 16-26 inches

Active season: Early April through November

Scales: Keeled, single anal plate

Description: Slender black or dark snake with three dorsal yellowish stripes. The lateral dorsal stripes occur only on the second and third scale rows. The belly is pale yellow, but may also be pale blue or green. Dark spots may be present on the outer edges of the belly scales. The light yellow or pale green upper lip is typically unmarked.

Diet: Frogs, toads, salamanders, earthworms, insects, and fish

Habitat: This species is a habitat generalist, occurring in most Minnesota habitats. It prefers forest and woodland edges, and has a strong affiliation for water and wet areas. They overwinter below the frost line in open canopy wetlands, mammal burrows, building foundations, cisterns, rock crevices and quarries. Gartersnakes den communally in very large numbers.

Hunting: Active forager

Reproduction: Livebearer, average litter is 27 young, but can vary greatly

Other name(s): Grass snake, garden snake

Notes: Most commonly encountered snake in Minnesota. Females are slightly longer and much heavier than males. Minnesota has two subspecies of gartersnakes, the red-sided gartersnake (*T.s. parietalis*) and the eastern common gartersnake (*T.s. sirtalis*).

COMMON WATERSNAKE

(*Nerodia sipedon*)

Nonvenomous—Rattlesnake Mimic



Erica Hoaglund

Common watersnake.

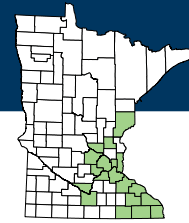


Barney Oldfield

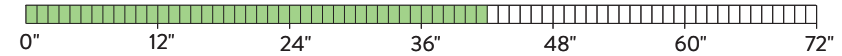
Common watersnake.

COMMON WATERSNAKE

Nonvenomous—Rattlesnake Mimic



Status: Not listed



Size: 24-42 inches

Active season: Late April through early October

Scales: Keeled, divided anal plate

Description: This heavy-bodied, aquatic snake has a base color of reddish brown to gray or tan, and is marked with dark blotches that may appear like bands around the snake. These blotches can be faded in older snakes, making the snake appear solid brown or black in color. The belly is cream or white with distinct irregularly spaced, reddish half-moons and gray speckling. Juveniles are similar to adults except their blotches are more pronounced in color.

Diet: Fish, amphibians, crayfish, and insects

Habitat: Occurs in or around water including ponds, lakes, rivers, streams and wetlands. Much time is spent basking on shore or on branches overhanging water. They overwinter below the frost line in upland rock crevices and holes away from water, but crayfish burrows, muskrat and beaver dams, and levees may also be used.

Hunting: Active forager

Reproduction: Livebearer, litter size is 6-99 young, with an average of 27

Other name(s): None known

Notes: This is Minnesota's only watersnake. This species is quick to bite to defend itself if cornered. Water moccasins (cottonmouths) and copperheads do not occur in Minnesota.

DEKAY'S BROWNSNAKE

(*Storeria dekayi*)

Nonvenomous



Barney Oldfield

DeKay's brownsnake.

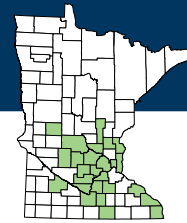


Carol Hall

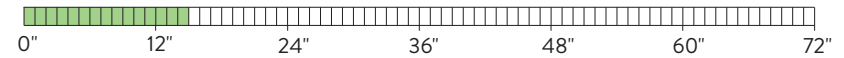
DeKay's brownsnake.

DEKAY'S BROWNSNAKE

Nonvenomous



Status: Not listed



Size: 8-15 inches

Active season: Mid-April through October

Scales: Keeled, divided anal plate

Description: Small, grayish brown snake with a light mid-dorsal stripe bordered by two parallel rows of small dark spots. The belly is pale pink or cream colored with dark pinpoint specks along the edges of the belly scales. There is typically a dark stripe behind each eye.

Diet: Earthworms, slugs, soft-bodied insect larva, and snails

Habitat: Found under the surface litter in a variety of habitats, including moist areas of deciduous forests and woodland edges, oak savannas, prairies, old fields, and urban areas. They overwinter below the frost line, often in the company of other snake species, in deserted ant mounds, rock piles and stone foundations, and use the same site year after year.

Hunting: Active forager

Reproduction: Livebearer, average litter is 13-14 young, but can vary greatly

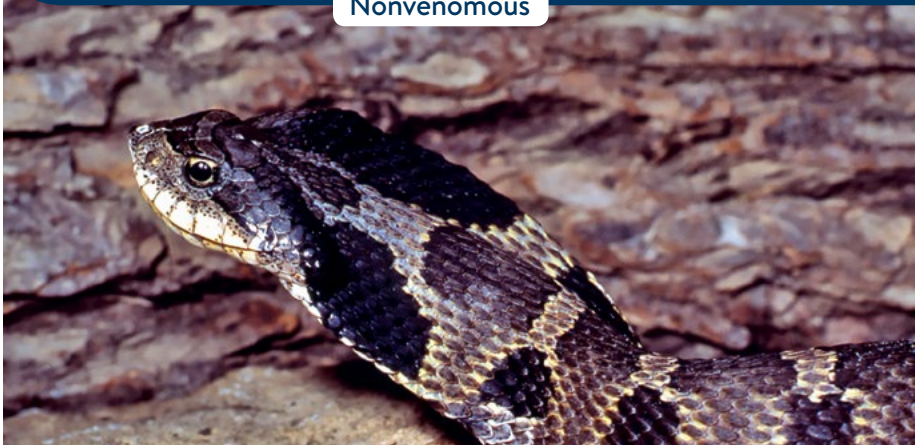
Other name(s): None known

Notes: The DeKay's brownsnake looks very similar to the red-bellied snake; however, the red-bellied typically has a bright red or salmon colored belly, and lacks the small black dots on the back.

EASTERN HOG-NOSED SNAKE

(*Heterodon platirhinos*)

Nonvenomous



Barney Oldfield

Adult eastern hog-nosed snake. Dark "eye spots" on neck.



Erica Hoaglund

Adult eastern hog-nosed snake (solid pattern variation).

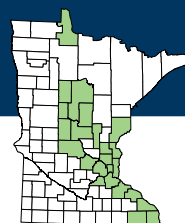


Liz Harper

Eastern hog-nosed snake playing dead. Light colored tail section below vent characteristic of this species.

EASTERN HOG-NOSED SNAKE

Nonvenomous



Status: Not listed
Species in Greatest Conservation Need



Size: 20-33 inches

Active season: Late April through October

Scales: Keeled, divided anal plate

Description: Medium-sized, stout-bodied snake with a sharply pointed and slightly upturned nose. Dorsal coloration can range from yellow brown to gray to olive, with dark brown blotches. Some adults have been observed with minimal to no dorsal pattern. Two dark spots occur on the neck, and resemble "eyespot" when the snake flattens its head. The belly is mottled yellow to mottled gray. In hatchlings, the ventral surface may be black, but the undersides of the neck and tail are yellow or white.

Diet: Primarily toads, other amphibians, and arthropods

Habitat: Prefer sandy areas in river floodplains, sand prairies, savannas and open woodlands. Spend most of their time underground in self-excavated burrows. They overwinter below the frost line in mammal or self-dug burrows.

Hunting: Active forager

Reproduction: Egg layer, clutch size is 4-63 eggs, with an average of 23

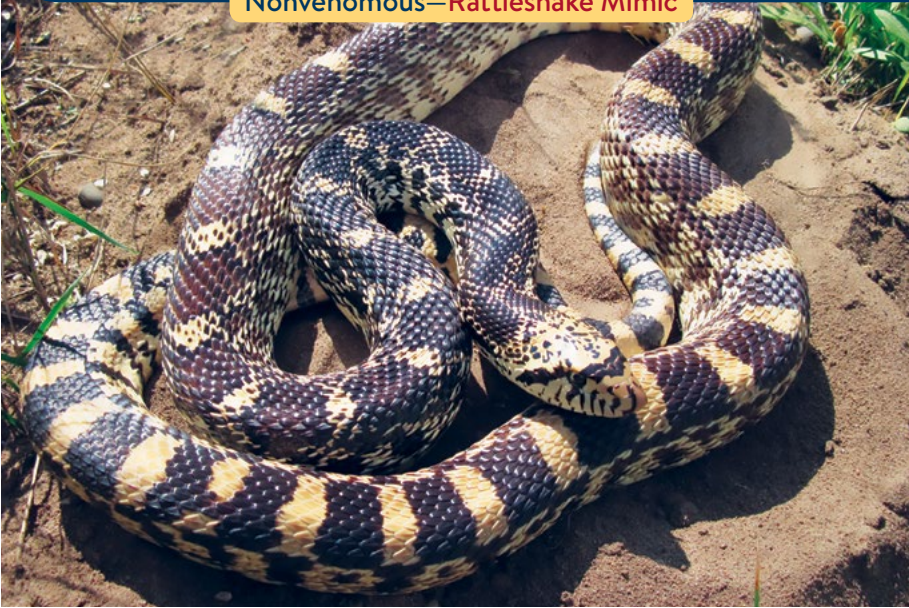
Other name(s): Blow snake, puff adder, cobra

Notes: If threatened, this snake will flatten its head and raise it like a cobra, hissing and striking repeatedly. It will also "play dead" by rolling on its back, regurgitating food, and excreting feces. The eastern hog-nosed is often confused with the Plains hog-nosed; however, the eastern has a less upturned nose and the underside of the tail is yellow.

GOPHERSNAKE

(*Pituophis catenifer*)

Nonvenomous—Rattlesnake Mimic



Erica Hoaglund

Adult gophersnake.

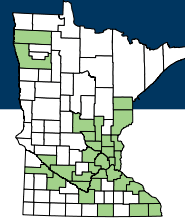


Erica Hoaglund

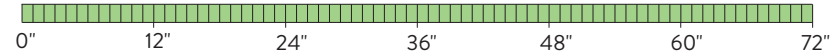
Juvenile gophersnake. Juveniles of this species have slightly different coloration than adults.

GOPHERSNAKE

Nonvenomous—Rattlesnake Mimic



Status: **Special Concern**
Species in Greatest Conservation Need



Size: 37-72 inches

Active season: Late April through early October

Scales: Keeled, single anal plate

Description: This snake is large and stout-bodied. Its head is heavily marked with black or near black markings, including a dark stripe from the eye to the corner of the mouth. The lips have distinct vertical black or near black bars. This snake's coloration is unusual in that it looks like three distinct patterns. The tail is typically yellow or golden brown with dark rings, and the snake's midsection contains black to reddish brown blotches. Coloration becomes more mottled with black and white as you move towards the head, where the blotch pattern becomes less distinct. The belly is pale yellow with square or rectangular dark spots.

Diet: Primarily rodents, but also birds, bird eggs, and frogs

Habitat: Occur in sand prairies, bluff prairies, oak savannas, oak barrens, and pastures. They overwinter below the frost line in small mammal burrows or rock crevices, often with other snake species.

Hunting: Constrictor, primarily diurnal in spring and fall, nocturnal in summer

Reproduction: Egg layer, clutch size is 2-24 eggs, with an average of 11

Other name(s): Bullsnake

Notes: This snake has a special piece of cartilage in front of its windpipe that allows it to make a hissing sound.

LINED SNAKE

(*Tropidoclonion lineatum*)

Nonvenomous



Carol Hall

Lined snake.

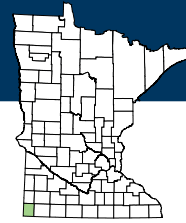


Carol Hall

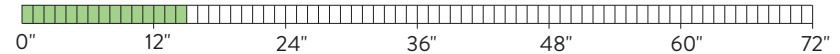
Underside of lined snake is patterned with black semi-circles.

LINED SNAKE

Nonvenomous



Status: **Special Concern**
Species in Greatest Conservation Need



Size: 8-15 inches

Active season: Late April through early October

Scales: Keeled, single anal plate

Description: Drab gray brown to olive dorsal color with three whitish gray to yellow dorsal stripes.

The center dorsal stripe is narrow, while the lateral dorsal stripes are wider, occupying scale rows two and three. The belly is white to pale yellow, marked with two rows of black semi-circles.

Diet: Earthworms, almost exclusively

Habitat: Prefers prairies, savannas, and woodland edges, hiding under cover. They overwinter below the frost line in self-excavated burrows, rock crevices and mammal burrows. This species has a limited range in Minnesota, occurring only in the southwestern part of the state.

Hunting: Active forager, uses scent, but sight may also play a role

Reproduction: Livebearer, litter size is 2-17 young, with average litter size of eight

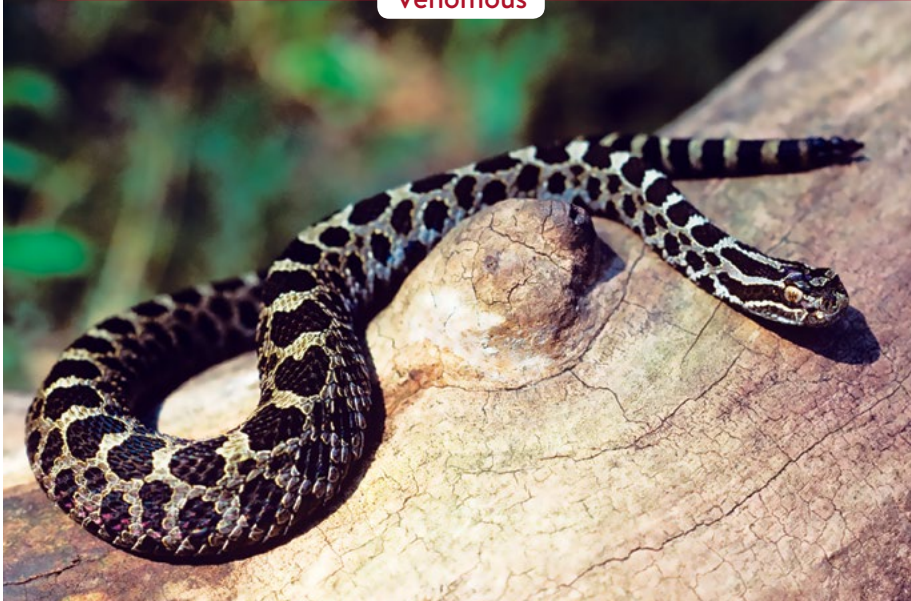
Other name(s): None known

Notes: Lined snakes look similar to gartersnakes; however, gartersnakes lack the double row of spots on the belly. Lined snakes are typically nocturnal and *semi-fossorial* (living underground), but can be found sunning in the open during the spring and fall.

MASSASAUGA

(*Sistrurus catenatus*)

Venomous



Rich Sajdak

Massasauga.

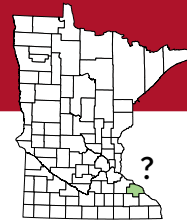


Rich Sajdak

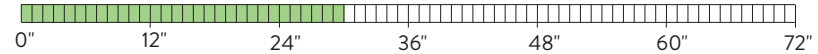
Massasauga.

MASSASAUGA

Venomous



Status: **Endangered** (possibly extirpated)
Species in Greatest Conservation Need



Size: 18-30 inches

Active season: Late April through early October

Scales: Keeled, single anal plate

Description: This medium-sized rattlesnake has a gray to brown background color with large mid-dorsal brown to black blotches, which are often outlined in a light color. There is a dark stripe running from the eye to the neck, and heat-sensing pits between the eyes and nostrils. Its tail is ringed with thick, dark bands, and gives way to a segmented rattle. The belly is dark with light mottling.

Diet: Rodents, small snakes, and frogs

Habitat: Prefers moist habitats such as marshes and other wetlands, backwater areas, and bottomland forests; often forages in more open, upland areas adjacent to water bodies. They overwinter below the frost line in crayfish burrows, mammal burrows, old tree stumps, or rock crevices.

Hunting: Ambush hunter, uses venom. Primarily diurnal in spring and fall, often nocturnal in summer. Young snakes wave their tail tip over their heads to attract prey items, such as frogs.

Reproduction: Livebearer, litter size is 2-20 young, with an average of eight

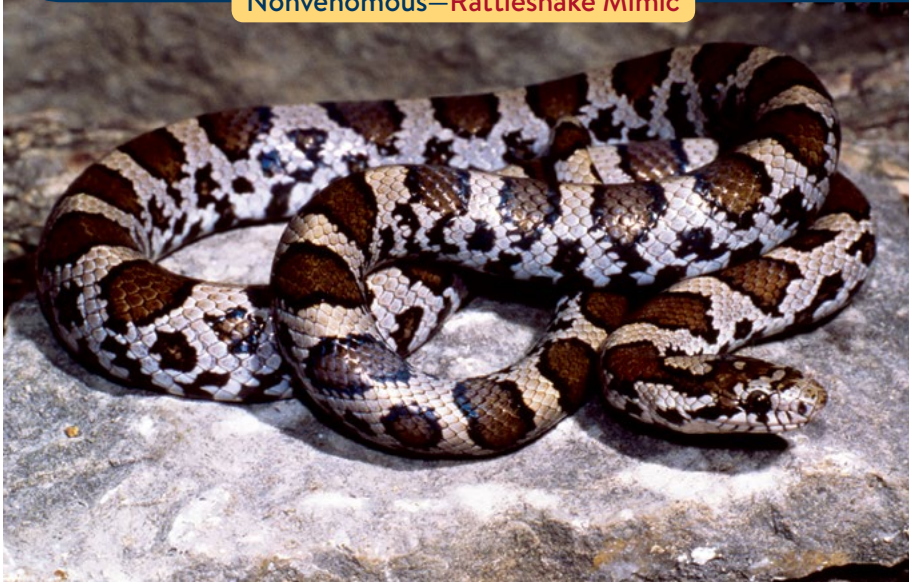
Other name(s): Swamp rattler

Notes: This species has not been documented in the state since before 1960. Sightings have been reported, but none have been confirmed as being a massasauga.

MILK SNAKE

(*Lampropeltis triangulum*)

Nonvenomous—Rattlesnake Mimic



Barney Oldfield

Adult milksnake.

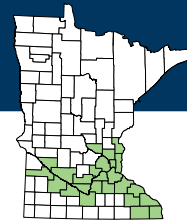


Jeff LeClere

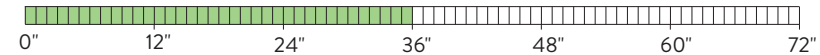
Juvenile milksnake. Juveniles of this species have different coloration than adults.

MILK SNAKE

Nonvenomous—Rattlesnake Mimic



Status: Not listed



Size: 24-36 inches

Active season: Mid-April through October

Scales: Unkeeled, single anal plate

Description: Medium-sized snake with a gray or light brown background color and reddish brown to brown blotches outlined in black along the back. The main row of larger blotches is bordered with smaller blotches along the sides of the snake. A light “Y” or “V” shaped marking often occurs on the back of the neck. The belly has a distinctive black and white or yellow checkerboard pattern. Hatchlings often have bright red dorsal blotches.

Diet: Primarily rodents, but also lizards, eggs, and other snakes

Habitat: Found in deciduous forests in association with rocky areas. They are also found in woodlots, savannas, pastures and prairies. They are often found near farm buildings and homes with stone foundations. They overwinter below the frost line in rock crevices, mammal burrows, cisterns, and stone foundations.

Hunting: Constrictor, primarily nocturnal

Reproduction: Egg layer, clutch size is 1-24 eggs, with an average of nine

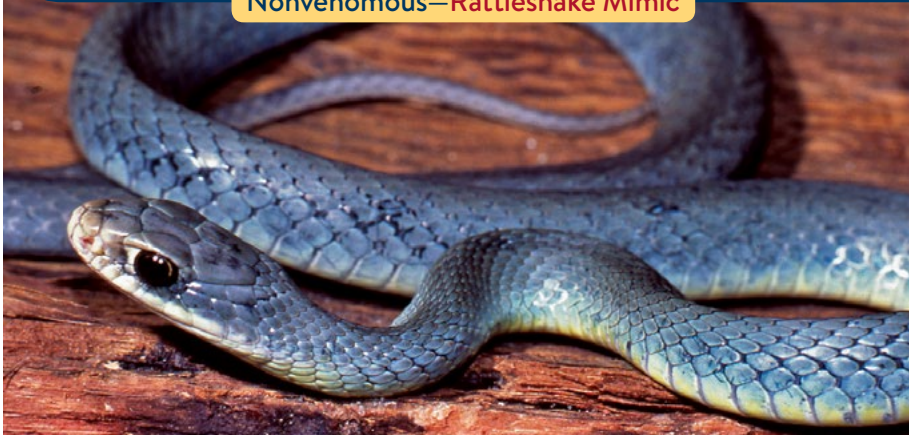
Other name(s): None known

Notes: This snake is frequently encountered in people’s homes, especially homes with stone foundations, and around barns.

NORTH AMERICAN RACER

(*Coluber constrictor*)

Nonvenomous—Rattlesnake Mimic



Barney Oldfield



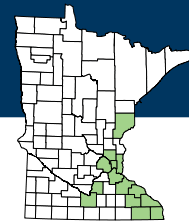
Barb Perry

Adult North American racers.



Christopher E. Smith

Juvenile North American racer. Juveniles of this species have different coloration and pattern than adults.

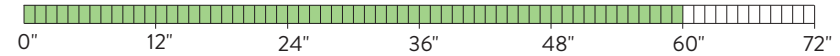


NORTH AMERICAN RACER

Nonvenomous—Rattlesnake Mimic

Status: **Special Concern**

Species in Greatest Conservation Need



Size: 36-60 inches

Active season: Late April through October

Scales: Unkeeled, divided anal plate

Description: This snake is sleek and slender, designed for rapid movement. Adults vary in color from a solid slate blue to gray or greenish. The throat is yellow and grades into a light gray to whitish belly. Young racers have dark dorsal blotches on the back and reddish brown spots on an otherwise white belly. Adult coloration is attained in about three years.

Diet: Rodents, birds, lizards, and insects

Habitat: Found in dry prairies, savannas, and woodland edges. They overwinter below the frost line in mammal burrows and rock crevices, often in the company of other snake species, and return to the same overwintering sites year after year.

Hunting: Active forager

Reproduction: Egg layer, clutch size is 1-36 eggs, average of 14

Other name(s): Yellow-bellied racer, blue racer, eastern racer

Notes: This snake is one of the fastest in North America, having been clocked at a speed of 4-miles-per-hour.

PLAINS GARTERSNAKE

(*Thamnophis radix*)

Nonvenomous



Barney Oldfield

Plains gartersnake.

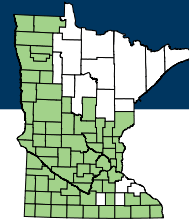


Erica Hoaglund

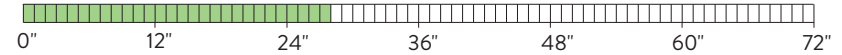
Plains gartersnake's upper lip is marked with bold, vertical black bars.

PLAINS GARTERSNAKE

Nonvenomous



Status: Not listed



Size: 16-28 inches

Active season: Mid-April through November

Scales: Keeled, single anal plate

Description: Medium-sized, striped snake with a dark brown to black dorsal color and three light-colored dorsal stripes. The mid-dorsal stripe is typically bright yellow, while the lateral stripes are pale yellow often with a greenish or bluish tint to them. These lateral stripes occur on the third and fourth scale rows. Two rows of alternating dark spots above the lateral stripes and one below can be seen if the snake's background color is not too dark. The greenish upper lip is marked with bold, black vertical bars. The belly is pale yellow to pale green or gray with black spots on the outer edge of the belly scales.

Diet: Frogs, toads, tadpoles, earthworms, insects, and fish

Habitat: Prefer moist open grasslands and prairies, savannas, and open areas around ponds, marshes and streams in grassland areas. They overwinter below the frost line, often with other snake species, in mammal burrows, deserted ant mounds, building foundations, and old wells.

Hunting: Active forager

Reproduction: Livebearer, average litter size is 10-20 young, but can vary greatly

Other name(s): Grass snake, garden snake

Notes: The Plains gartersnake looks very similar to the common garter and lined snakes. The common gartersnake does not have any markings on its lip and the lined snake has a double row of half-moon spots on its belly.

PLAINS HOG-NOSED SNAKE

(*Heterodon nasicus*)

Nonvenomous



Barney Oldfield

Adult Plains hog-nosed snake.



Erica Hoaglund

Plains hog-nosed snake. Underside of tail below vent is black.

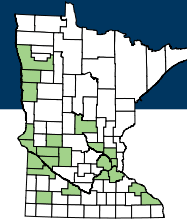


Erica Hoaglund

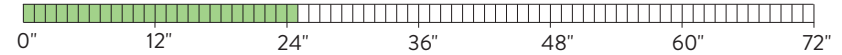
Juvenile Plains hog-nosed snake. Juveniles of this species have different coloration than adults.

PLAINS HOG-NOSED SNAKE

Nonvenomous



Status: **Special Concern**
Species in Greatest Conservation Need



Size: 15-25 inches

Active season: Early May through September

Scales: Keeled, divided anal plate

Description: Medium-sized, stout-bodied snake with a sharply pointed and upturned nose. This snake is tan to gray, with dark brown blotches running mid-dorsally. Two rows of smaller blotches can occur on each side. Two dark spots occur on the neck, and resemble “eyespot” when the snake flattens its head. The head has a dark bar between the eyes, and from each eye to the corner of the mouth. The belly is black with cream or yellow edging. The underside of the tail is black.

Diet: Toads, frogs, salamanders, lizards, shrews, and mice

Habitat: Prefer open sandy or gravelly areas in river floodplains and sand prairies. They overwinter below the frost line in mammal or self-dug burrows.

Hunting: Active forager

Reproduction: Egg layer, clutch size is 2-24 eggs, with an average of 11

Other name(s): Western hognose, blow snake, puff adder, cobra

Notes: If threatened, this snake will flatten its head and raise it like a cobra, hissing and striking repeatedly. It will also “play dead” by rolling on its back, regurgitating food, and excreting feces. The Plains hog-nosed is often confused with the eastern hog-nosed; however, the Plains has a more upturned nose and the underside of the tail is black.

RED-BELLIED SNAKE

(*Storeria occipitomaculata*)

Nonvenomous



Barney Oldfield

Red-bellied snake showing typical coloring.

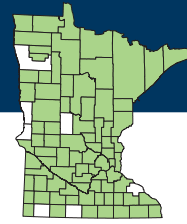


Christopher E. Smith

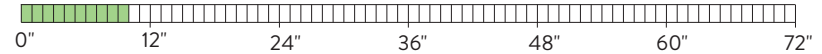
Red-bellied snake showing color variation.

RED-BELLIED SNAKE

Nonvenomous



Status: Not listed



Size: 8-10 inches

Active season: Late April through October

Scales: Keeled, divided anal plate

Description: Distinctive characteristic is the bright red, salmon or orange-colored belly. The dorsal color can range from solid reddish brown to black with a light mid-dorsal stripe and two narrow darker stripes on each side.

Diet: Primarily slugs, but also earthworms, beetle larva, and snails

Habitat: Prefer moist woodland habitats, but can be found in adjacent fields or wet areas. They overwinter below the frost line, often with other snake species, in abandoned ant mounds, rock crevices, and stone foundations.

Hunting: Active forager

Reproduction: Livebearer, litter size is 1-23 young, with average litter size of eight

Other name(s): None known

Notes: The red-bellied snake looks very similar to the DeKay's brownsnake; however, the brownsnake's belly is typically much paler in color and it has small black dots along the dorsal stripe.

RING-NECKED SNAKE

(*Diadophis punctatus*)

Nonvenomous



Barney Oldfield



Kelly Lynch Pharris

Ring-necked snake.

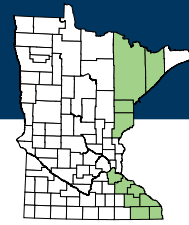


Kelly Lynch Pharris

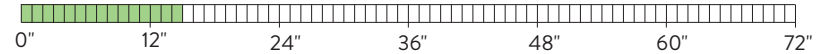
Ring-necked snake demonstrating its defensive “corkscrew” behavior.

RING-NECKED SNAKE

Nonvenomous



Status: Not listed



Size: 10-15 inches

Active season: April through October

Scales: Unkeeled, divided anal plate

Description: Solid shiny bluish black to gray on its back, with a bright yellow-orange ring around its neck. Belly is yellow to orange, often with bright red on the underside of its tail. Black spots are scattered across the snake’s belly. Ring-necked snakes in northern Minnesota have few to no black spots on the belly.

Diet: Insects, earthworms, slugs, small salamanders, frogs, and other snakes

Habitat: Often found on south to west-facing hillsides and bluffs in southeastern Minnesota, and under rocks, logs, or bark in damp deciduous forests in northern Minnesota. These snakes are quite secretive, spending much of their time under flat rocks and in crevices. They prefer areas with abundant ground cover. They overwinter in rock crevices or animal burrows that go below the frost line.

Hunting: Active forager at night, uses scent

Reproduction: Egg layer, clutch size is 1-10 eggs, with an average of five

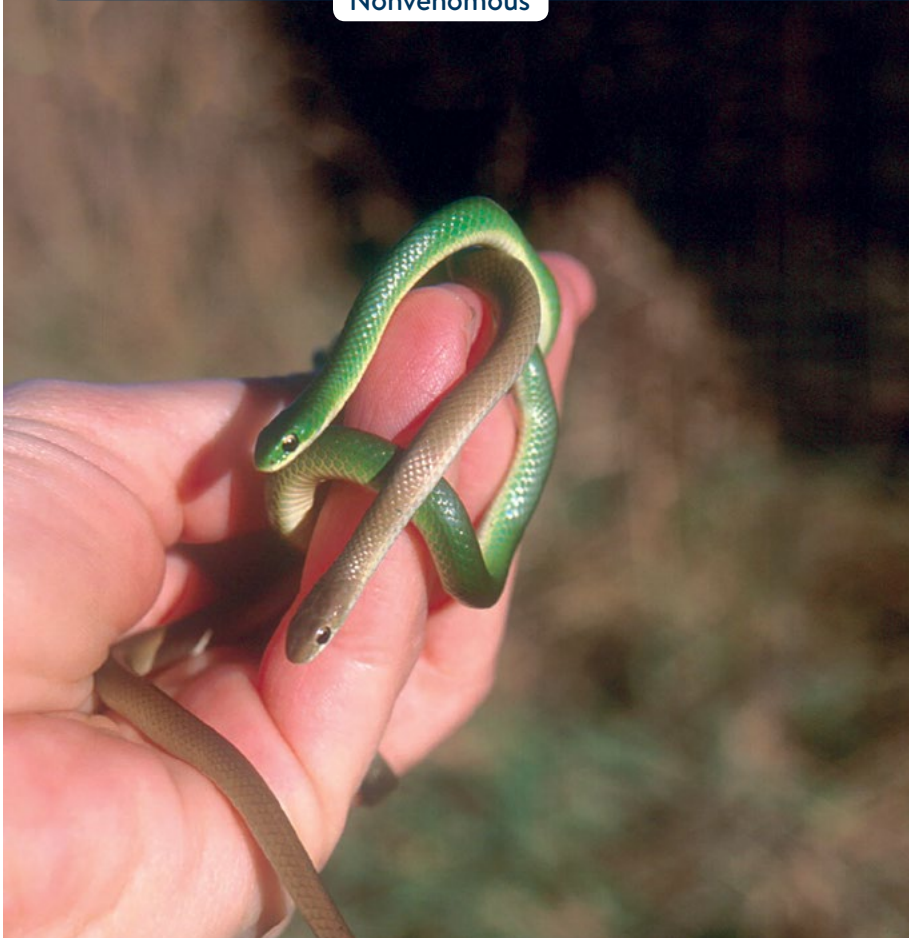
Other name(s): Corkscrew snake. This nickname was earned because of one of the snake’s defensive behaviors; it rolls its tail into a tight coil to show its bright underside in a flashy display.

Notes: Minnesota has two subspecies of ring-necked snakes. The prairie ring-necked (*Diadophis punctatus arnyi*) occurs in southeastern Minnesota, whereas the northern ring-necked (*D. p. edwardsii*) is found in Pine County and north. *D. p. edwardsii* is a Species in Greatest Conservation Need.

SMOOTH GREENSNAKE

(*Opheodrys vernalis*)

Nonvenomous



Carol Hall

Color variation in two smooth greensnakes.

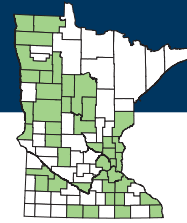


Dave Crawford

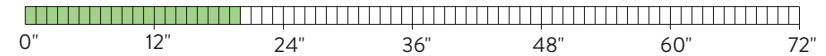
Cryptic coloration in a smooth greensnake.

SMOOTH GREENSNAKE

Nonvenomous



Status: Not Listed
Species in Greatest Conservation Need



Size: 14 to 20 inches

Active season: Mid-April through September

Scales: Unkeeled, divided anal plate

Description: Bright green, solid dorsal color with a white or pale-yellow belly. Some light brown specimens have been found. This snake is very slender. Hatchlings are solid olive green.

Diet: Grubs, worms, insects—especially caterpillars, spiders, and grasshoppers

Habitat: Found in prairies, meadows, savannas, and in woodland and marsh edges. They overwinter below the frost line, often with other snake species in ant mounds and other structures.

Hunting: Active forager

Reproduction: Egg layer, clutch size is 2-18 eggs, with an average of seven

Other name(s): Grass snake

Notes: This snake loses its bright green coloration upon death, often fading to pale blue. As a result, it may be mistaken for a North American racer (*Coluber constrictor*). However, racers of this size are juveniles and have a blotched pattern rather than a solid color.

TIMBER RATTLESNAKE

(*Crotalus horridus*)

Venomous



Barney Oldfield

Timber rattlesnake.

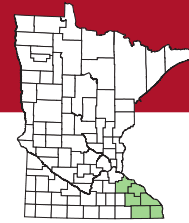


Jaime Edwards

Female timber rattlesnake, with *neonates* (newborns) in the background. Neonates and first-year juveniles are gray, rather than brown like the adults.

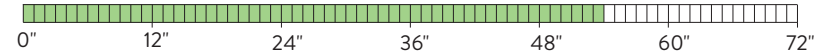
TIMBER RATTLESNAKE

Venomous



Status: **Threatened**

Species in Greatest Conservation Need



Size: 36-54 inches

Active season: Late April through early October

Scales: Strongly keeled, single anal plate

Description: This heavy-bodied snake has a distinctly triangular, unmarked head that is solid rust to brown in color. The body color is rust-orange, to yellow, brown or gray, and has dark brown to black chevrons (bands) along its back. Minnesota snakes typically have an auburn mid-dorsal stripe. The velvet-black tail ends in a cream-colored, segmented rattle.

Diet: Rodents

Habitat: Prefers south to west facing bluff prairies and associated oak forests. They overwinter in rock crevices that reach below the frost line, often in the company of other snakes species. Timber rattlesnakes use the same places to hibernate year after year.

Hunting: Ambush hunter, uses venom. Primarily diurnal in spring and fall, often nocturnal in summer.

Reproduction: Livebearer, litter size is 1-20 young, with an average of 10

Other name(s): Banded rattler, velvet tail

WESTERN FOXSNAKE

(*Pantherophis ramspotti*)

Nonvenomous—Rattlesnake Mimic



Barb Perry

Adult western foxsnake.

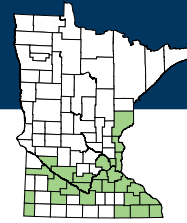


Christopher E. Smith

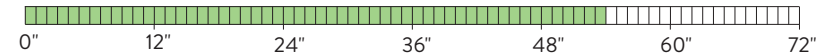
Juvenile western foxsnake. Juveniles of this species have different coloration than adults.

WESTERN FOXSNAKE

Nonvenomous—Rattlesnake Mimic



Status: Not listed



Size: 36-54 inches

Active season: Late April through October

Scales: Weakly keeled, divided anal plate

Description: This snake has a yellowish tan to gray background color with brown to black mid-dorsal blotches and a row of alternating smaller blotches along each side. Blotches are outlined in black. The head is a solid copper or brown color. The belly is pale yellow with brown or black markings. Young foxsnakes typically have a lighter background color, and a dark bar between their eyes, extending to the corner of the mouth on each side.

Diet: Rodents, ground-nesting birds and their eggs

Habitat: Often found in riparian (river) areas, upland hardwood forests, pine barrens and prairies; typically near a river or stream. They overwinter below the frost line in rock crevices, mammal burrows, wells and stone foundations.

Hunting: Constrictor

Reproduction: Egg layer, clutch size is 7-29 eggs, with an average of 14

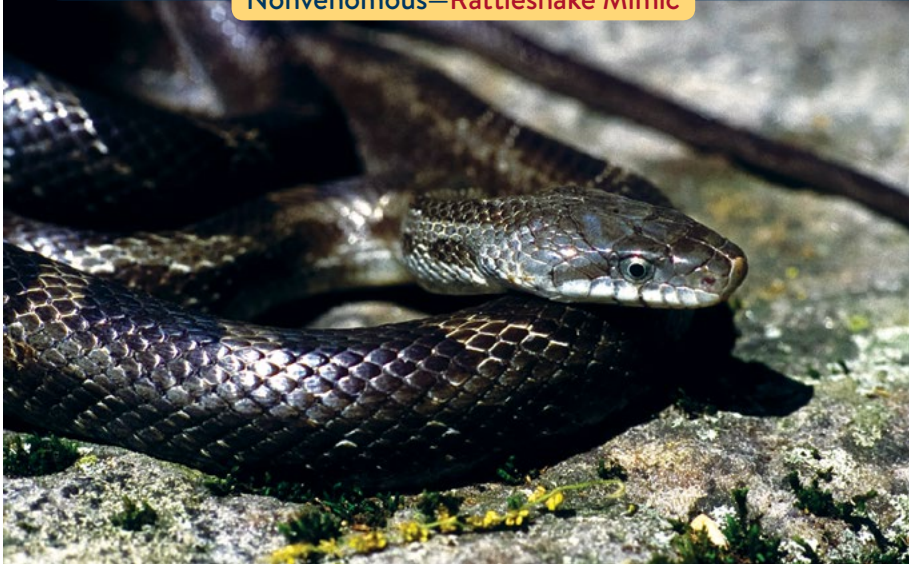
Other name(s): Pine snake, copperhead

Notes: This snake is frequently encountered in people's homes, especially homes with stone foundations. The previous scientific names for this snake were *Elaphe vulpina* and *Pantherophis vulpinus*.

WESTERN RATSLAKE

(*Pantherophis obsoletus*)

Nonvenomous—Rattlesnake Mimic



Rich Sajdak

Adult western ratsnake.

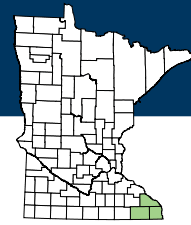


Jeff LeClerc

Juvenile western ratsnake. Juveniles of this species have different coloration and pattern than adults.

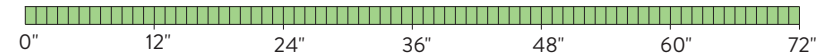
WESTERN RATSLAKE

Nonvenomous—Rattlesnake Mimic



Status: **Threatened**

Species in Greatest Conservation Need



Size: 42-72 inches

Active season: Late April through early October

Scales: Weakly keeled, divided anal plate

Description: A large snake with dark brown to black dorsal coloration that may be flecked with white, yellow or orange between the scales. Mid-dorsal blotches may occur, but are often indiscernible. The most distinctive feature of this snake is its bright white chin and throat. The belly is dark gray to brown with red and yellow flecks. Young western ratsnakes are heavily patterned with dark blotches on a gray background.

Diet: Rodents, birds and eggs

Habitat: Occurs primarily in oak forests, but can occasionally be found on bluff prairies. They overwinter in deep, rock crevices below frost line.

Hunting: Constrictor, typically diurnal but may be nocturnal during hot weather

Reproduction: Egg layer, clutch size is 4-44 eggs, with an average of 15

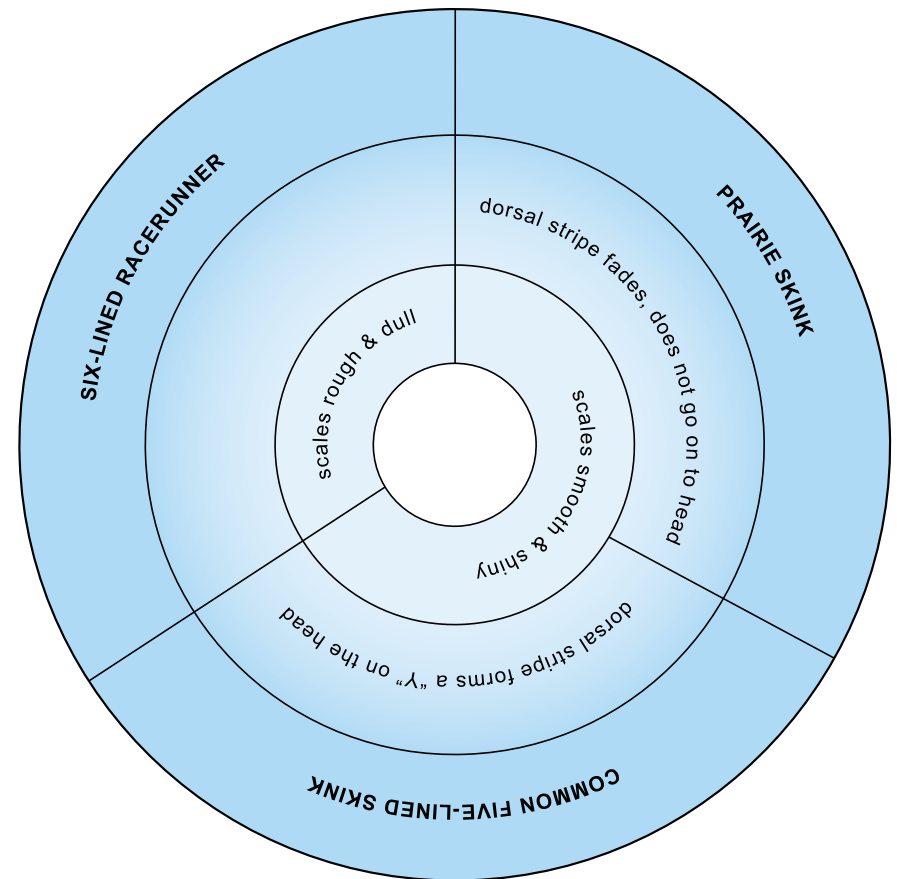
Other name(s): Pilot blacksnake, black ratsnake

Notes: This snake is primarily *arboreal* (tree dwelling). The previous scientific name for this snake was *Elaphe obsoleta*.



KEY TO MINNESOTA'S LIZARDS

The keys in this booklet are designed to be used with adult specimens. Start at the center of the key and work towards the outer ring. When you think you have the correct species, look in the Table of Contents for its page number and compare the photo with your specimen. If the photo does not match the species then back up to previous ring in key and try again.



Original key concept and design by John Moriarty.
Adapted and used with permission.

Six-lined racerunner. Photograph by Jaime Edwards.

COMMON FIVE-LINED SKINK

(*Plestiodon fasciatus*)



Carol Hall

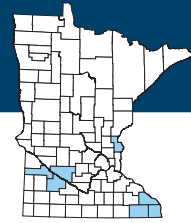
Adult common five-lined skink.



Carol Hall

Juvenile common five-lined skink. Blue tail.

COMMON FIVE-LINED SKINK



Status: **Special Concern**
Species in Greatest Conservation Need



Size: 5 to 8 inches in total length, snout to vent length maximum of $3\frac{3}{8}$ inches

Active season: Early-May to September

Description: A small lizard with a long tail and small legs. Its back is marked with five distinct yellow stripes. These stripes form a "Y" on top of the head. The body in juveniles and females is shiny black, while males are brown to gray with less distinct, or no, stripes. During mating season, the male's nose, cheeks, lips and throat turn bright orange-red.

Dorsal scales: Smooth, shiny and large

Diet: Roaches and spiders, along with crickets, beetles, moths, snails, and other small invertebrates

Habitat: South-facing, rocky outcrops, old woodlots, along moist forest edges, and openings in pine barrens, oak savannas and dry northern hardwood forests. They overwinter below the frost line in rock fissures and cracks below the frost line.

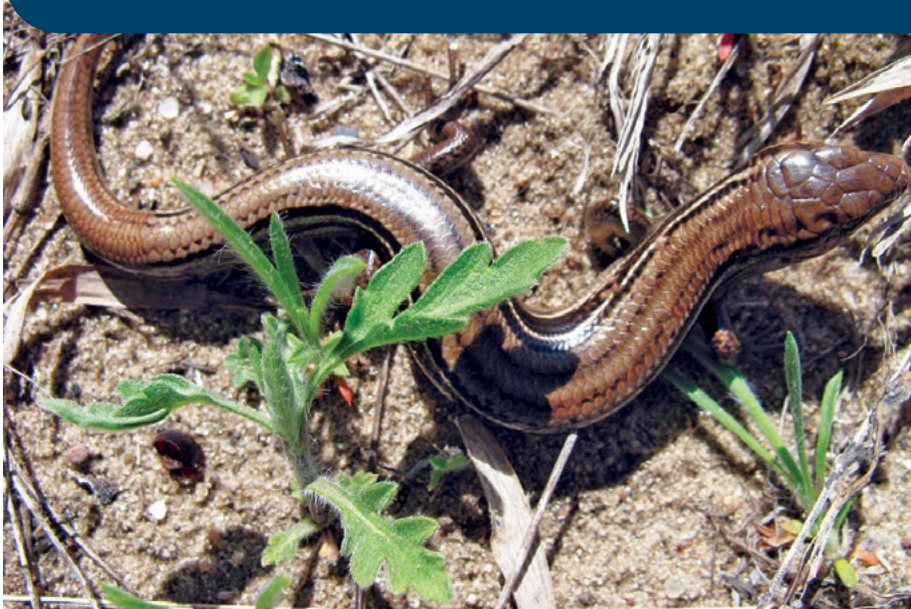
Hunting: Active forager

Reproduction: Egg layer, clutch size is 5-13 eggs, with an average of nine

Notes: Common five-lined skinks easily lose their tail to predators, with the detached tail continuing to wiggle, to distract the predator. The tail does regrow over time, but it is not as long or colorful as the original. Juvenile five-lined skinks have a bright blue tail. The previous scientific name for this lizard was *Eumeces fasciatus*.

PRAIRIE SKINK

(*Plestiodon septentrionalis*)



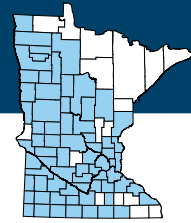
Erica Hoaglund

Prairie skink.



Christopher E. Smith

Male prairie skink with bright orange coloration shown during mating season.



Status: Not listed



Size: 5¼ to 8¾ inches in total length, snout to vent length maximum of 3½ inches

Active season: Early May through September

Description: This medium-sized lizard has a long tail and small legs. It is marked with three wide tan to light brown stripes, separated by two narrow black stripes along the length of the back. The dorsal stripe fades and does not extend to the top of the head. The tail color is basically the same as the body. During mating season, the males head, neck and lips turn bright orange.

Dorsal scales: Smooth, shiny and large

Diet: Crickets, grasshoppers, beetles, caterpillars, spiders, and other small arthropods

Habitat: Often found along stream banks or openings in pine barrens, oak savannas and grasslands. They overwinter in self-constructed burrows below the frost line.

Hunting: Active forager

Reproduction: Egg layer, clutch size is 5-13 eggs, with an average of nine

Notes: Prairie skinks easily lose their tail to predators, with the detached tail continuing to wiggle, to distract the predator. The tail does regrow, but it is not as long or colorful as the original. Juvenile prairie skinks are black with seven thin, yellowish stripes and a bright blue tail. Prairie skinks are the most commonly encountered lizard in Minnesota, except for on bluffs in southeast Minnesota, where the six-lined racerunner is more commonly encountered. The previous scientific name for this lizard was *Eumeces septentrionalis*.

SIX-LINED RACERUNNER

(*Aspidoscelis sexlineata*)



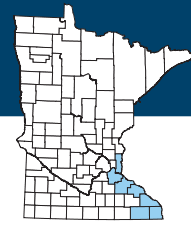
Jaime Edwards

Six-lined racerunner.



Kelly Lynch Pharis

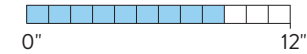
Six-lined racerunner.



SIX-LINED RACERUNNER

Status: Not listed

Species in Greatest Conservation Need



Size: Up to 9 inches in total length, snout to vent length $2\frac{1}{3}$ to $3\frac{1}{8}$ inches

Active season: Mid-May to late August

Description: This lizard has a slender body with a long tail. It is marked with six light yellow to yellow-green dorsal stripes from behind the eye to the base of the tail. Its body is brown or dark brown, and bright green or yellow-green on the sides.

Dorsal scales: Rough and dull

Diet: Grasshoppers, crickets, beetles, ants, flies, spiders, and other arthropods

Habitat: Open sandy or gravelly areas with little ground vegetation, prairies on south facing bluffs and sand outwashes in river floodplains. They overwinter below the frost line in underground burrows, ordinarily self-excavated in loose soil.

Hunting: Active forager

Reproduction: Egg layer, clutch size is 1-6 eggs

Notes: Racerunners' tail can break off if grabbed by a predator. Juvenile six-lined racerunners have a powdery blue-green tail. The previous scientific name for this lizard was *Cnemidophorus sexlineatus*.

GLOSSARY

Arthropods

Insects, spiders

Barrens (Oak, Pine)

Native plant community characterized by droughty soils that typically occur on nearly level to slightly undulating sandy glacial outwash

Bioaccumulate

The accumulation of a substance, such as a pesticide, in the tissue of a living organism

Crepuscular

Active primarily at dawn and dusk

Cryptic coloration

Color or pattern of an animal that allows it to blend into its surroundings

Diurnal

Active primarily during the day

Dorsal

Upper side or top of body

Ectothermic

Regulate body temperature by exchanging heat with surroundings (cold-blooded)

Endangered

Species is threatened with extinction throughout all or a significant portion of its range within Minnesota

Extirpated

The eradication of a species from a portion of its natural range

Habitat generalist

An animal with the ability to thrive in a wide variety of environments

Hibernaculum

Overwintering area

Keeled

Narrow ridge found on the scales of some snakes and lizards

Lateral

Sides of body

Loreal pit

Deep depression on either side of the head, between eye and nostril, which is used for sensing heat

Mid-dorsal

Running down the center of the back

Nocturnal

Active primarily at night

Oak Savanna

Native plant community with a diversity of grasses and flowering plants, along with scattered “open-grown” oaks

Rattlesnake mimic

A nonvenomous snake that imitates a rattlesnake by rapidly shaking its tail, in vegetation or against an object, to produce a “rattle” sound similar to that of a rattlesnake

Riparian

Associated with the bank of a river, lake or stream

Semi-fossorial

Spending part of life underground

Special Concern

A species that is extremely uncommon in Minnesota, or has unique or highly specific habitat requirements and deserves careful monitoring of its status. (Species on the periphery of their range may be included in this category along with those species that were once threatened or endangered but now have increasing or stable populations.)

Species in Greatest Conservation Need

Species whose populations are rare, declining in Minnesota or elsewhere, or are vulnerable because of habitat changes and habitat needs, and human or environmental threats

Threatened

Species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range within Minnesota

Unkeeled

Lack of narrow ridge found on the scales of some snakes and lizards

Ventral

Lower side or belly of body

APPENDIX

Resources

Minnesota Department of Natural Resources:
www.mndnr.gov

Minnesota DNR Rare Species Guide:
www.mndnr.gov/rsg/index.html

Snake hibernaculum online plans:
www.torontozoo.com/AdoptAPond/snakehibernacula.asp

Minnesota Herpetological Society:
www.bellmuseum.org/herpetology/

If you would like more information on the snakes and lizards of Minnesota, please refer to the book, *Amphibians and Reptiles in Minnesota* by John J. Moriarty and Carol D. Hall.

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Carrol Henderson

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