

Amphibians & Reptiles

of Minnesota, Wisconsin
& Michigan



Allen Blake Sheldon

A field guide to all 77 species & subspecies



Western Great Lakes Naturalist Series

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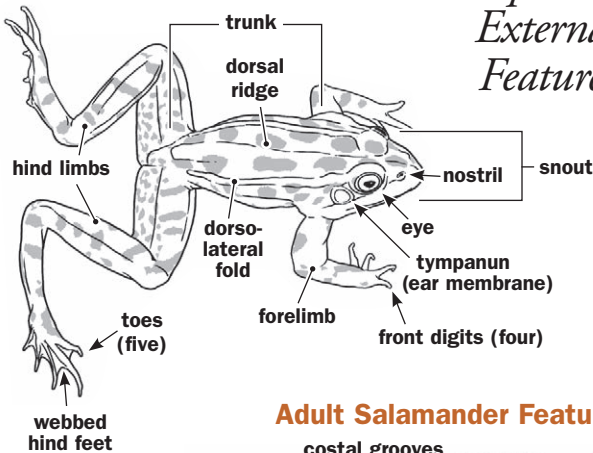
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Meet the Amphibians

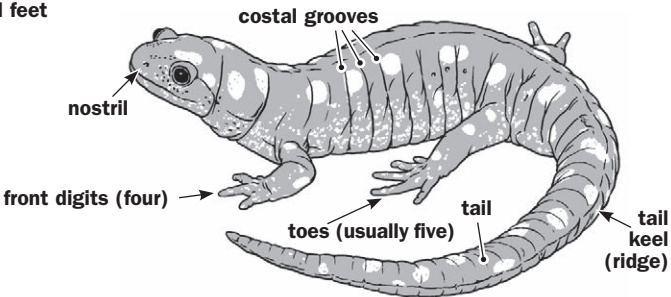
Amphibian is a combination of two Greek words: *amphi* meaning double and *bios* meaning life. As the name states, many amphibian species lead two lives: first as an aquatic form breathing with gills, and then as a terrestrial form breathing with lungs. But there are many exceptions to this generalization.

Adult Frog Features

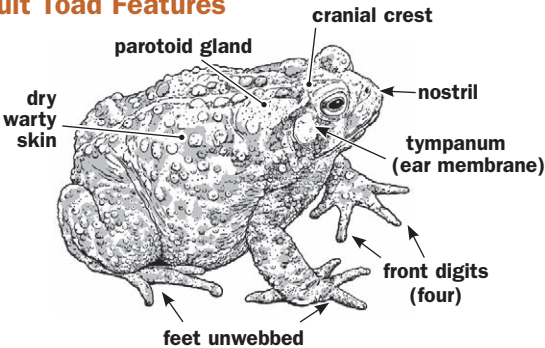
Amphibian External Features



Adult Salamander Features

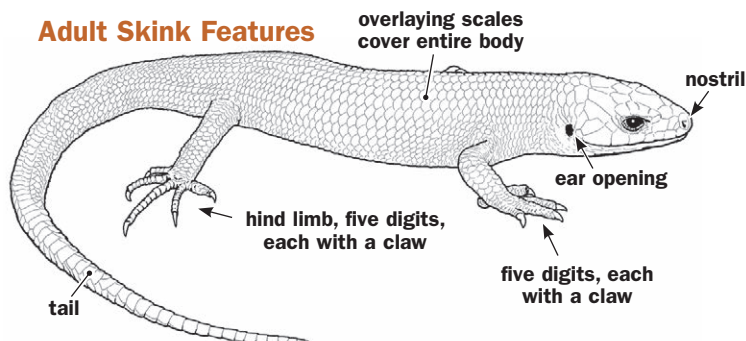


Adult Toad Features

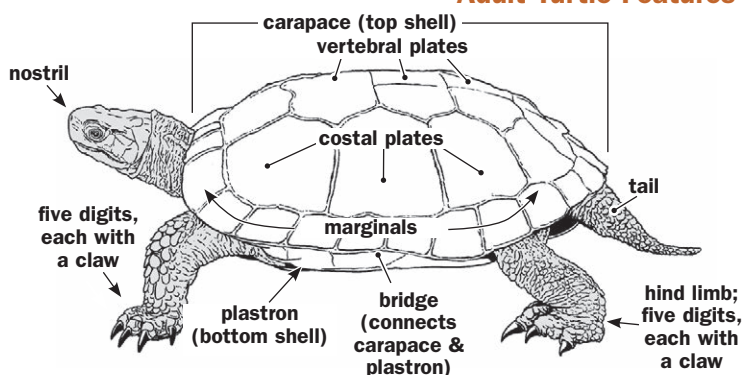


Reptilian External Features

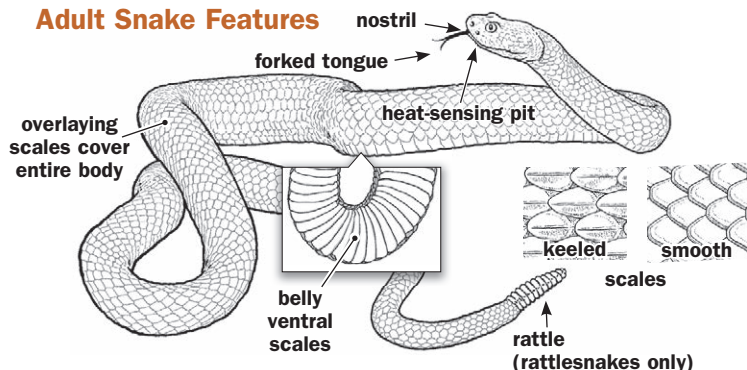
Adult Skink Features



Adult Turtle Features



Adult Snake Features



from the mother. Instead, each embryo has its own yolk sac. Because of this difference, live-bearing snakes are said to be ovoviviparous. When born, each juvenile snake emerges from its enclosing membrane.

There are actually different kinds of reptile eggs. One kind is hard-

Red-spotted Newt (subspecies of Eastern Newt)

Notophthalmus viridescens viridescens

salamanders



eft stage

Small ponds, shallow lakes, river backwaters and clear streams with much aquatic vegetation. Efts found in woods near breeding pond.

Nature Notes:

Red-spotted Newts are diurnal and forage on various aquatic invertebrates, such as mosquito larvae, plus the eggs and larvae of other amphibians.

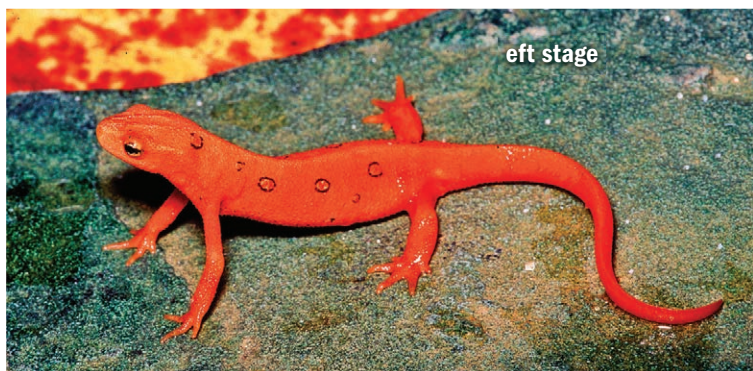
During winter they may remain in deeper waters or waters kept open by springs, but newts in shallow water crawl out and hibernate on land.

Because of its terrestrial habitat, the eft needs more protection and has more poison glands concentrated on its back than the aquatic adult. The red or orange coloration of an eft is probably a warning color.

A salamander with little round bright red spots scattered across both the eft and the adult.

Description: Length is 2 ½ to 4 inches

The Red-spotted Newt is a subspecies of the Eastern Newt. It has *bright red spots, usually bordered by black and sometimes in two rows on the back*. The *skin is not slimy* like most salamanders but is dryer. In its normal aquatic adult form, it has a tail fin but no gills. Adult males, during the breeding season, have an enlarged tail fin that extends from the tail over much of the back. If dryer environmental conditions force newts into a terrestrial existence, the tail fin is lost and the skin turns darker and rough. The eft, an intermittent land stage between larva and adult, is red, orange, or reddish brown with a yellowish belly. The red spots are clearly visible on its back



The Red-spotted Newt's eft stage is sometimes bright orange. It is a subspecies of the Eastern Newt found north of Lake Superior in Ontario.



Note the red to orange spots that give this attractive amphibian its name.

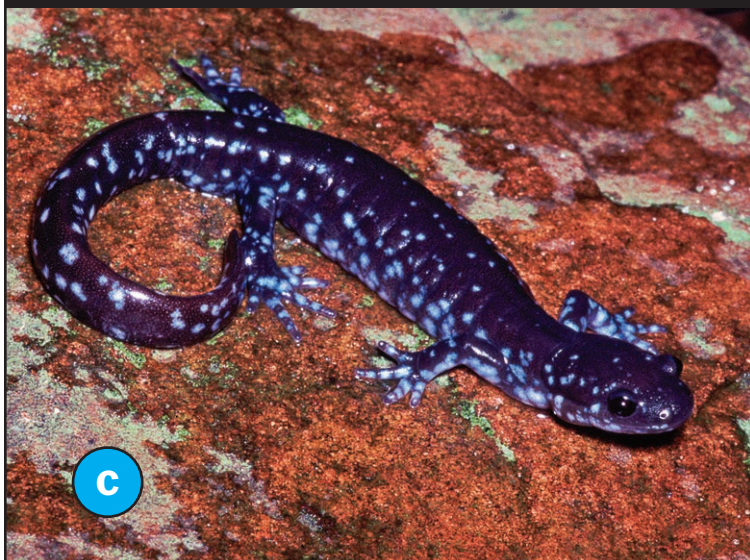
Courtship, Mating & Eggs: Active all year with courtship in late fall and winter. The male will grasp the female and wave his tail, fanning his scent towards her. Then he walks in front of her and deposits a spermatophore, which she picks up and stores in her cloaca. In April, the eggs are fertilized as the female lays them. She spends several days attaching 12 to 140 eggs, usually individually, on submerged plant stems. Varying with water temperature, the eggs hatch in about a month. By the end of summer the larvae are ready for a change. Some metamorphose into the terrestrial eft stage, while others metamorphose directly into adults.

Range Notes: Found northeast of Lake Superior in Ontario and also in the southeastern portion of Lower Michigan. Range extends to Nova Scotia, North Carolina and east central Alabama.



Blue-spotted Salamander

Ambystoma laterale



Forested areas that have vernal pools for breeding. Tolerant of dry woods and disturbed areas. Even under logs in summer.

Nature Notes:

The Blue-spotted Salamander can exude a white sticky substance from the skin, especially on the base of the tail, to discourage predators. When threatened, the salamander raises and waves its tail, perhaps as a warning.

Blue-spotted Salamanders are more likely to be found under logs during summer than other mole salamanders, most of which have retreated underground.

Our only salamander speckled with blue.

Description: Length is 4 to 5 ½ inches.

The Blue-spotted Salamander is dark gray to nearly black with *numerous small blue spots or flecks on the head, body and tail*. Often, the flecks are heaviest on the sides and tail, with few on the back. Newly metamorphosed salamanders have yellow specks instead of blue.

Courtship, Mating & Eggs: Blue-spotted Salamanders are thought to hibernate around the edge of the breeding pond, because in early spring they often precede the Spotted Salamanders by a couple days. During courtship, the male clasps the female behind her front legs for a time before moving in front of her and depositing one to three spermatophores. She picks up the sperm packet and stores it in her cloaca for a couple days. She lays 1 to 35 eggs, attaching them singly or in



The amount of blue spotting varies. The tail is paler because it was broken off and regenerated.



larval stage

Older larva show dark blotches on back with mottling on tail fin and an irregular light stripe down each side. Toes are rounded with five on hind foot. Dorsal fin nearly to head.

small clusters to submerged twigs and leaves. The larvae hatch out in 3 to 5 weeks and metamorphose in August.

Range Notes: Absent from extreme western and southwestern Minnesota and a portion of southwestern Wisconsin, but then are found north and east through Michigan. Range extends from eastern Manitoba to Nova Scotia and to northeast Illinois.



Eggs attached to submerged twig.



Developing embryo inside egg.

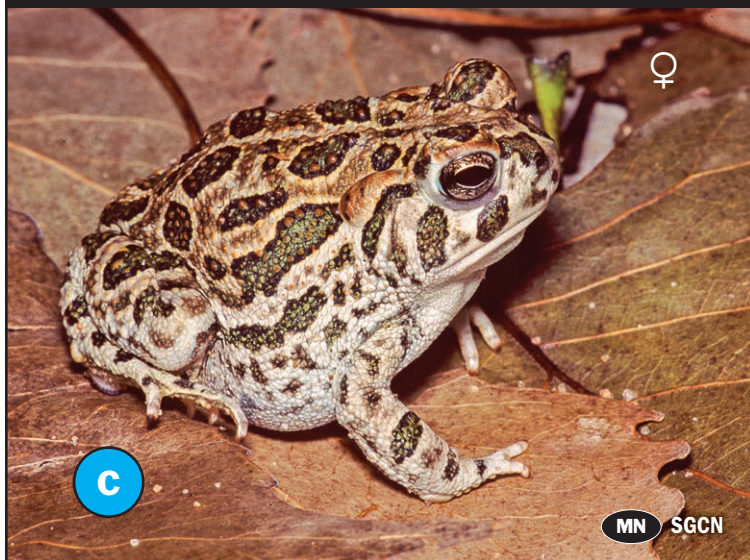


Still a juvenile, but its original yellow flecks have now turned blue.



Great Plains Toad

Anaxyrus cognatus



Open areas like prairies, grasslands, fields, and floodplains.

Nature Notes:

The Great Plains Toad's toxic skin is a defense against most predators but not against the Plains Hog-nosed Snake. When seized by the snake, the toad puffs up his body with air so he is too large to be eaten. But the snake has a pair of enlarged rear teeth that puncture the toad and it is swallowed whole.



Dorsal view of head showing cranial crests & parotoid glands.

This toad's call is up to 50 seconds, but it's pulsating and mechanical and not musical.

Description: Length is 2 to 3 ½ inches.

The Great Plains Toad has *dark spots on its back with light colored edging* around each one. *Each spot has several, small reddish warts.* The ground color is tan to dull green. The *parotoid glands are oval and smaller than those of American Toads.* The *cranial crest is V-shaped between the eyes.* The *belly is white* with no black markings, but adult males have a dark throat. The *male's vocal pouch is oblong when calling* and protrudes farther than the American Toad's rounded vocal pouch.

Voice: A harsh, loud, mechanical call similar to a jackhammer for nearly a minute.

Courtship, Mating & Eggs: Great Plains Toads depend on early summer thundershowers to provide water for breeding. Then they



toads

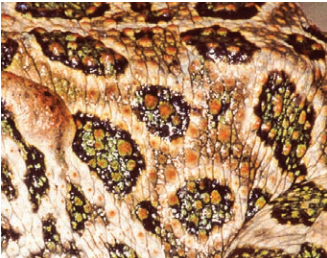
This Great Plains Toad is obviously a female because her throat is white instead of dark.

quickly emerge from the ground and head for the new shallow breeding pools. A female can lay over 40,000 eggs and breed more than once in a summer. In only two to seven days the young are hatched. Their tadpole stage is temperature dependent and varies from nearly three to six weeks.

Range Notes: Western Minnesota into Montana and south to west Texas, Arizona and Mexico.

Nature Notes:

The Great Plains Toad is mostly nocturnal and an expert burrower, both of which help it avoid summer heat. But when the weather remains hot and dry the toads burrow down and estivate until it rains.



Each spot encircles several reddish warts.



Fowler's Toad

Anaxyrus fowleri



Open woodlands and open areas (avoids dense forests). Needs moist soil for burrowing and leaf litter and debris for hiding.

Nature Notes:

Fowler's Toad has all the defenses of the American Toad, but it might have one more. Reportedly it will sometimes play dead when roughly handled. Some predators will not feed on prey that is already dead.

Fowler's Toad is more active than the American Toad during daylight hours but will still burrow into the ground and estivate during hot, dry weather.



Dorsal view of head showing cranial crests & parotoid glands.

A toad that calls with a low bleat only lasting two to seven seconds.

Description: Length is 2 to 3 inches.

Fowler's Toad can be distinguished from the American Toad in several ways. First, consider range: Fowler's Toad does not occur in Minnesota, Wisconsin or Michigan's Upper Peninsula. The *parotoid glands of Fowler's Toad are up against the cranial crests, not just touching a tip*. The *largest black spots on the back contain three or more warts*. The tibia does not have greatly enlarged warts. The chest has no spots or perhaps one.

Voice: The male Fowler's Toad advertisement call, a low pitched nasal "*waaah*," bears no resemblance to the American Toad's call.

Courtship, Mating & Eggs: Fowler's Toad uses a variety of temporary pools for breeding, which usually occurs later than the breeding



The Fowler's Toad's color doesn't match this background because it was crossing a gravel road.



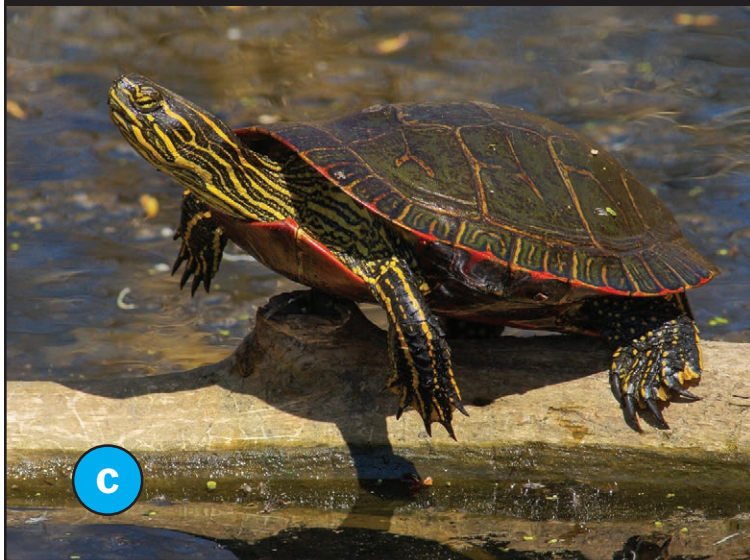
Note that the largest black spots on a Fowler's Toad have three or more warts. American Toads only have one or two warts within a black spot.

of American Toads in the same area. The female Fowler's Toad averages 7,000 to 10,000 eggs, deposited in two long strings. Inspection with a magnifying glass shows the egg-holding strings have no partitions, distinguishing them from the strings of American Toads where partitions keep eggs separate. The tiny black tadpoles, which look like American Toad tadpoles, hatch out in a few days and metamorphose about a month later.

Range Notes: From western Michigan, Fowler's Toad ranges to Louisiana and east into North Carolina and north New England.



Western Painted Turtle (subspecies of Painted Turtle) *Chrysemys picta bellii*



Slow-moving streams, ponds, lakes, and swamps with aquatic vegetation, muddy bottoms and basking sites.

Nature Notes:

Western Painted Turtles are the most common and most obvious chelonian in Minnesota and Wisconsin. They're especially noticeable in the early spring when the sun is warm, but the water is cold. In ponds where logs are few, turtles can be lined up or stacked on every available surface.



These eggs will hatch in 50 to 80 days...if not dug up and eaten by raccoon, fox, skunk or other predators.

The most common turtle in Minnesota and Wisconsin; most noticeable when basking on a sunny April day.

Description: Carapace length is 4 to 7 inches.

The Western Painted Turtle is one of two subspecies found in our three states. It has a low, smooth, dark olive-green carapace with extensive red coloring on the plastron and ventral surface of the marginals. The upper jaw has a pair of sharp cusps flanking a notch. It has yellow stripes but *lacks the red stripes on the legs and neck*. The plastron has a larger dark pattern that extends out on some of the seams.

Some Painted Turtles have a dark reddish-brown coating on the shell, most visible on the plastron. This is caused by absorbing chemicals in the water. When the outer layer of the scutes is shed, so is the color. Males have long front claws and are smaller than females.



Over 35 painted turtles vie for space on a prime basking log.



The hatchling's plastron is very colorful.



This turtle just came out of hibernation, because the dried mud is still on his shell.

The brightly colored hatchlings have a more circular carapace with a slight vertebral keel.

Diet: Omnivorous, feeding on aquatic plants, insects, worms, minnows, tadpoles and more.

Courtship, Mating & Eggs: The male swims in front of the female, extends his front feet and flutters his long claws on the sides of her face and neck. She will usually reach out and stroke his front legs. She then sinks to the bottom and he follows and mounts her from behind.

Females lay 3 to 20, more likely 6 to 9, elliptical white eggs. The eggs hatch in 50 to 80 days and the young often overwinter in the nest. Females take 6 to 10 years to reach maturity while males can breed in 3 to 7 years.

Range Notes: Ranges north into Canada, west through the Dakotas and south into southern Missouri and Kansas. In eastern Wisconsin and in the middle of the Upper Peninsula, it intergrades with the Midland subspecies.



Kirtland's Snake

Clonophis kirtlandii



Edges of swamps and marshes, woods, fields, meadows, parks and vacant lots.

Secretive, often hiding under logs, rocks, or sheltering in crayfish burrows. They are seen more often in spring or fall, because in the summer they are nocturnal.

When threatened, it can spread its body flat, and I mean flatter than other snakes, so from above it appears larger. It stiffens its body and remains still, for whatever good that does. If touched it writhes or hides its head under its coils or tries to escape. If captured, it can release a foul smelling musk.

Kirtland's Snake is actually a type of watersnake but is less aquatic than the others. It can swim but is hardly ever found in water.

It has been extirpated from areas, when its vacant lot habitat was developed.

A small, very secretive snake that can flatten its body to extreme proportions

Description: Length is 14 to 18 inches. Record is 26 inches.

Kirtland's Snake is *reddish brown or grayish brown with four rows of small dark blotches or spots running down its back and sides.*

These blotches are faded and indistinct in old individuals. Some have a faint dorsal stripe on their back. The scales are keeled. Its *head is black with white on its mouth and throat.* Its belly is brick red with a row of round black spots on each side.

Hatchlings are dark without evident spots but with a more intense belly color.

Diet: Mostly earthworms and slugs but also other small invertebrates like crayfish, leeches and water striders.



Juvenile Kirtland's Snakes are darker than adults. The black head and white throat stands out.



Though rarely found in water, Kirtland's Snakes are closely related to watersnakes.

Courtship, Mating & Young: Mating is in the spring with 4 to 15 young born in late summer or early fall. Like other live birth snakes, the young are enclosed in a membrane from which they soon crawl out. Newborn snakes are ready to defend themselves as they will coil, open their mouths and strike at an enemy. At least some of the females mate in their second spring.

Range Notes: Not found in Minnesota or Wisconsin. Southwest Michigan to north-east Illinois. Central Illinois and southern Indiana north to southwest Ohio. Scattered in Pennsylvania and Kentucky.



Blue Racer (subspecies of North American Racer)

Coluber constrictor foxii



Dry sunny areas such as hillsides, forest edges, open woods, and grasslands.

Nature Notes:

Blue Racers are diurnal, alert, fast snakes that crawl with the head and neck elevated to better spot the movement of potential prey. They use their speed to catch frogs, lizards, snakes or mice. Bird eggs or young are also on the menu, and the Blue Racer will climb through bushes to get them.

Contrary to their Latin species name, they do not constrict prey but simply overpower it.

The Blue Racer will use speed to escape enemies, but when cornered it will coil defensively, vibrate its tail and bite.

Ten other subspecies are recognized in North America.

A fast snake that cruises prairies and open hillsides with its head held high as it searches for prey.

Description: Length is 36 to 60 inches. Record is 75 inches.

The Blue Racer is the subspecies found in our area. The *scales are smooth, and its color is bluish gray*. It has *large eyes and a white or yellowish chin and throat*.

The belly is light gray, pale blue or yellow.

Juvenile Blue Racers look nothing like the adults. The juveniles are heavily blotched with dark reddish brown on a gray or tan ground color. The head and belly are spotted. Attaining the adult coloration takes two years.

Diet: Frogs, lizards, snakes, mice, bird eggs and young birds. Blue Racers do not kill by constriction.



Note the adult's distinctive yellow throat.



Juveniles are blotched with dark spots and look nothing like the adults (bottom left). This stage lasts a year or two. Adults show either a whitish or yellow chin and throat (top left). Photo on right shows a half-grown Blue Racer; not checkered, not yet blue.



Courtship, Mating & Eggs: The male Blue Racer will follow the pheromone trail of a female and catch up to her. His body ripples with movement as they entwine and mate. In late June or July, she lays 3 to 32, usually 8 to 20 elongated eggs with a granular texture, like they've been sprinkled with salt. They do not adhere to each other and hatch in 43 to 65 days.

Males take one or two years to mature while females require two or three.

Range Notes: The Blue Racer subspecies is found in most of southeastern Minnesota and most of southwestern Wisconsin as it seems to have followed the Mississippi, Minnesota, and Wisconsin Rivers. It also inhabits the western and southern areas of Lower Michigan. Illinois, Indiana, northwest half of Ohio.



Recently emerged juvenile and eggs.



Prairie Ring-necked Snake (subspecies of Ring-necked Snake) *Diadophis punctatus arnyi*

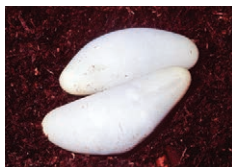


Bluff prairies and southwestern facing wooded bluffs with lots of rocks.

Nature Notes:

Ring-necked Snakes are very secretive and very rarely bask out in the open. They spend most of their time under rocks or in burrows, as they hide or regulate their body temperature. Over the years, I've found about 200 Prairie Ring-necked Snakes and only three were not underneath a rock.

In the spring and fall, numerous individuals may be found on certain bluffs, as they seem to live in colonies.



Eggs are elongate and become distorted.

This small snake has a unique defensive behavior of coiling its tail and displaying the bright colored underside.

Description: Length is 10 to 15 inches. Species record is 27¹¹/₁₆ inches.

The Prairie Ring-necked Snake is one of the subspecies in our three state area. It is dark bluish gray with a *distinctive bright orange collar*. The scales are smooth. The *underside is bright yellow, changing to reddish-orange as it nears the tail*. The ventral surface is covered with scattered black spots.

Hatchlings have the same colors and patterns as adults.

Diet: Earthworms, slugs, insects, spiders, small salamanders, frogs, lizards and snakes. Ring-necked Snakes are constrictors when necessary. Also, they have enlarged upper rear teeth and toxic saliva which may help subdue their prey.



Juveniles, even recently hatched, match the color of the adults.



Orange belly transitions to red-orange at the tail (bottom left). When threatened the Prairie Ring-necked Snake corkscrews its tail revealing the bright orange underside and protects its head under a coil (right)



Courtship, Mating & Eggs: Breeding takes place soon after emergence from hibernation. The female lays 2 to 10 eggs inside or under rotting logs or stumps or underneath rocks or in burrows. The eggs are long and are somewhat shriveled. After absorbing water, they may appear distorted. They will hatch in 40 to 60 days. There is a single report of a female giving birth to six live young.

Range Notes: In southeastern Minnesota and southwestern Wisconsin along the Mississippi and lower Wisconsin Rivers. Ranges south to northwest Arkansas, eastern New Mexico and southeast South Dakota.

Nature Notes:

As a defense mechanism, the Ring-necked Snake will coil its tail into a corkscrew shape and display the bright reddish-orange bottom at the intruder, while hiding its head under a coil. A potential predator may strike at the tail and give the snake a chance to escape.





About the Author

Allen Blake Sheldon, called Blake by family and friends, lives in Trempealeau, Wisconsin, where he roams the Upper Mississippi River National Wildlife & Fish Refuge, Trempealeau National Wildlife Refuge and Perrot State Park. His enjoyment of amphibians and reptiles began early, with herpetology becoming a major interest during

eighth grade. He received a BA in biology from Winona State University, studied Spotted Turtles in Maryland and taught high school biology. He has been seriously photographing amphibians, reptiles and other wildlife for over forty years, mostly in Minnesota and Wisconsin, but also in North Carolina, Florida, the Southwest and Belize. His photos have appeared in *National Wildlife*, *National Geographic*, *Natural History*, *Wildlife Conservation*, *Sierra*, *Defenders*, *Audubon* and many other magazines, books and calendars. He has promoted interest and understanding of amphibians and reptiles by writing articles for magazines and presenting programs for environmental and photography groups. His first book was *Amphibians and Reptiles of the North Woods*, published by Kollath-Stensaas in 2006.



*Timber
Rattlesnake*

Amphibians & Reptiles of Minnesota, Wisconsin & Michigan

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