

Six Slippery Salamanders

Surprise! Find the hidden world of Minnesota's six species of salamanders under logs and leaf litter.

By JOHN J. MORIARTY

In Kentucky, where I went to college, there are 36 species of salamanders. I enjoyed walks in the woods because I could find at least one of these neat and interesting critters under every rock or log I turned over. After moving to Minnesota, with its six species of salamanders, I found out that looking for them under logs could be very tiring!

Sometimes I would flip over several hundred logs and not find any salamanders at all.

The first salamander I saw in Minnesota was a tiger salamander. Soon after that introduction, I had the challenge of explaining to an old northern woodsman that the yellow-spotted "lizards" he saw on the road were not lizards, but tiger salamanders. After I explained the many differences between salamanders, which are amphibians, and lizards, which are reptiles, he looked at me and said, "I don't see them lizards like I used to." I hope he reads this article.

Salamander or lizard?

TIGER SALAMANDER BY ALLEN BLAKE SHELDON



This is a smooth, moist salamander.

Salamanders and lizards are cold-blooded animals. Both have four legs and a long tail. Otherwise, they have many differences. Salamanders, being amphibians (like frogs),

have moist, smooth skin. Lizards, being reptiles (like snakes and turtles), have dry, scaly skin.

Salamanders lay shell-less eggs in the water. Lizards lay eggs with shells on land.



This is a dry, scaly lizard.

FIVE-LINED SKINK BY BARNEY OLDFIELD

Where to spot salamanders

The world has about 350 species of salamanders. About one-third of these live in the United States.

About 50 species live in the

southern Appalachian Mountains. That's the greatest concentration of salamander species in the country. The number of species that live in any given area generally decreases as you

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move away from the Appalachian Mountains.

Salamanders live in most of Minnesota, from prairies to forests.

Most areas of the state have only one or two species, but all six Minnesota species live in the northeastern corner of the state. Look under a rock or log.

Learn more about sallyies.

Two good books are *Amphibians and Reptiles Native to Minnesota* by Barney Oldfield and John J. Moriarty and *Salamanders of the United States and Canada* by J. Petranka.

The DNR and John J. Moriarty produced a video called *The Amphibians of Minnesota*. For more information, call 651-297-4966.

Hard-to-find and disappearing

We have fewer salamanders in Minnesota today because more roads, buildings, and farm fields block their paths to breeding ponds and habitat.

Another problem is fish. Because fish eat salamanders and compete for the same food, the best home for a

salamander is a wetland or pond *without* fish. Unfortunately for salamanders, fish have gotten into many wetlands in recent years. Some fish have traveled between wetlands by swimming through ditches that people dug. People have also stocked game fish in some salamander waters.

Look for the answers to this quiz.

- Minnesota's largest salamander is:
 - Tiger salamander
 - Red-backed salamander
 - Mudpuppy
 - Eastern newt
 - Four-toed salamander
 - Eastern newt
- Minnesota's most dangerous salamander is:
 - Blue-spotted salamander
 - Mudpuppy
 - They build fancy nests.
 - They have longer tails.
 - They don't have scales.
 - They have long breeding calls.
- Salamanders differ from lizards because:
 - They build fancy nests.
 - They have longer tails.
 - They don't have scales.
 - They have long breeding calls.

Answers on page 37.

Life of a tiger

Amphibian means double life. Most salamanders do, indeed, lead two lives: the first in water as eggs and larvae breathing with gills; the second on land as adults breathing with lungs.

Let's look at the life cycle of tiger salamanders, the most common and widespread

This salamander larva needs a fun nickname.

salamander species in Minnesota.

Adult tiger salamanders spend the winter on land. They hibernate underground, below the frost line, in tunnels made by gophers or other mammals, or in tunnels they dig themselves. Lured by warm spring rains, the adults move to small ponds and wetlands just after the ice melts.

Traveling at night, some of them accidentally fall into window wells and swimming pools. Those that make it to a breeding pond pair up and do a courtship dance. The male rubs the female and nudges her around the floor of the pond. During the dance, the male deposits a *spermatophore*, a small white packet of sperm, on the bottom of the pond. The female picks up the

spermatophore with the lips of her *cloaca* (a single vent for reproduction and elimination of wastes) and fertilizes her eggs. She then lays clumps of 10 to 100 eggs at a time on

Name the larvae.



TIGER SALAMANDER LARVA BY BARRY OLDFIELD

Salamanders and frogs, another amphibian, both have smooth skin, jelly-coated eggs, and aquatic larvae. Frog larvae have interesting common names: tadpoles and pollywogs. Salamander larvae are just called salamander larvae. I propose we call them *sallywogs*. Do you like this name, or can you make up a new one? Send your ideas to Young Naturalists, DNR, 500 Lafayette Road, St. Paul, MN 55155-4046.

Will these eggs hatch into "sallywogs"?

the pond bottom—up to 5,000 eggs during the next several days.

After about 14 days, the eggs hatch, and the small larvae begin a hazardous life in the pond. Most of the larvae will be eaten by predators before they can leave the pond. The

predators range from dragonfly larvae to great blue herons, with many other species in between, including tiger salamanders. Yes, tiger salamanders! Salamander larvae are predators that will eat anything they can fit in their mouths. This includes their smaller brothers, sisters, and cousins.

Salamander larvae look very different from tadpoles. They have external gills (to breathe oxygen dissolved in water) and front legs even as very young larvae. Older larvae look

similar to adults with the exception of their gills.

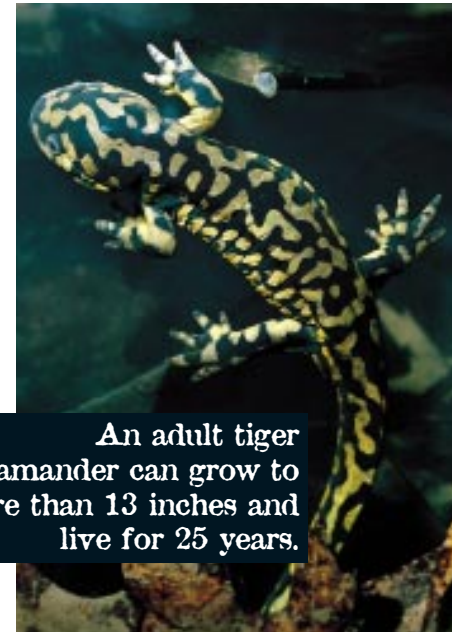
After three to four months, the larvae go through metamorphosis: They lose their gills, leave the pond, and start using their lungs to breathe. They will return to the ponds only to mate and lay their eggs. If they are lucky, they will repeat this cycle for 25 years.

On land the salamanders need to use humid habitats so they do not dry



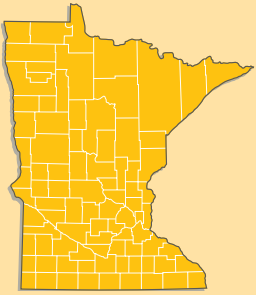
EGGS BY E.R. DEGGINGER, DEMBINSKY PHOTO ASSOCIATES

out. To stay moist, they might live in the leaf litter or under rotten logs. Tiger salamanders spend a lot of time in mammal burrows. They feed on insects, worms, and other animals they find in the burrows. Salamanders come to the surface only when the humidity is very high, for example, at night or while it is raining.



An adult tiger salamander can grow to more than 13 inches and live for 25 years.

GARY MESZAROS, DEMBINSKY PHOTO ASSOCIATES



Tiger Salamander (*Ambystoma tigrinum*) is Minnesota's most common salamander species. Found in both prairies and forests, it is black with yellow spots but can vary from almost all yellow to all black. It is usually 8 to 10 inches long. The largest known tiger salamander in the United States, from Minnesota's Douglas County, was almost 14 inches.

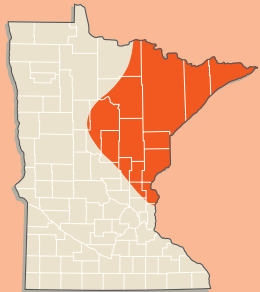
Bait stores often sell larval tiger salamanders, which they call waterdogs. Tiger salamanders once were collected for medical research, but population declines and changes in research have ended this practice.



BARNEY OLDFIELD

This subspecies is found in western Minnesota.

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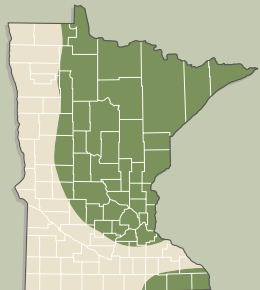


Eastern Red-backed Salamander (*Plethodon cinereus*) is brown with a red stripe down its back and is usually less than 3 inches long. This species belongs to a family of salamanders without lungs. It breathes through its skin and mucous membranes.

Unlike other salamanders, the redback lays its eggs on land, usually under a log or rock. The eggs hatch into miniature versions of the adults. It is the only Minnesota salamander that does not have an aquatic stage.



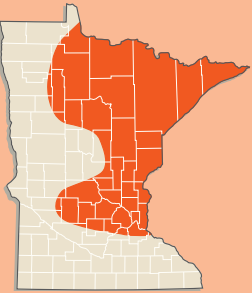
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Blue-spotted Salamander (*Ambystoma laterale*) is named for the blue flecks on its black body. About 3 to 5 inches long, it lives in forests, especially north of the Twin Cities, and breeds in temporary woodland ponds, which sometimes dry up before the larvae get a chance to metamorphose.



SKIP MOODY, DEMBINSKY PHOTO ASSOCIATES



Eastern Newt (*Notophthalmus viridescens*) transforms from a larva into a red eft and moves to land. This teenage stage can last a few months to several years. The eft's reddish-orange color is a warning that it has toxic skin. Animals that try to eat this salamander will get sick. The eastern newt's western cousins are so toxic that they have been known to kill people who have put them in their mouth.

After the eft stage, the newt becomes an aquatic adult, mostly green with red spots. Newts are 2½ to 5 inches long. In Minnesota, newts are most common in the northeast.

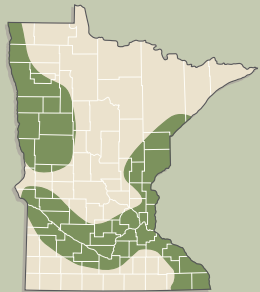


GARY MESZAROS, DEMBINSKY PHOTO ASSOCIATES



BARNEY OLDFIELD

An eft is a teenage stage.

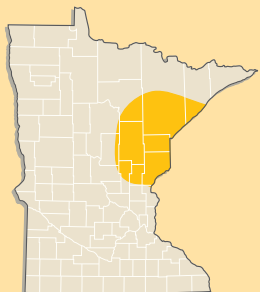


Mudpuppy (*Necturus maculosus*) never loses its gills and is completely aquatic for its entire life. It is found throughout Minnesota's major river systems and some larger lakes. An exception is the Mississippi River above St. Anthony Falls in Minneapolis because mudpuppies were unable to get around the waterfall. Some animals can walk around the waterfall on land, but mudpuppies cannot leave the water.

The largest salamander in Minnesota, the mudpuppy can be more than 15 inches long. It is active all winter, which has startled many ice anglers who have caught one.



GARY MESZAROS, DEMBINSKY PHOTO ASSOCIATES



Four-toed Salamander (*Hemidactylum scutatum*) was discovered in Minnesota in 1994 in Chippewa National Forest. Since then, it has turned up in six northeastern counties.

This species is 3 to 4 inches long and named for the four toes on its hind feet. All other Minnesota salamanders have four toes on their front feet but five on their rear feet. ▣



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