



AMPHIBIANS OF OHIO *field guide*

DIVISION OF WILDLIFE



INTRODUCTION

Amphibians are typically shy, secretive animals. While a few amphibians are relatively large, most are small, delicately attractive, and brightly colored. That some of these more vulnerable species survive at all is cause for wonder.

Nearly 200 million years ago, amphibians were the first creatures to emerge from the seas to begin life on land. The term amphibian comes from the Greek *amphi*, which means dual, and *bios*, meaning life. While it is true that many amphibians live a double life – spending part of their lives in water and the rest on land – some never go into the water and others never leave it.

All amphibians are cold-blooded animals with a soft, glandular, often moist skin which is capable of absorbing oxygen into the body. Amphibians don't drink water rather they absorb it through their skin.

Unlike reptiles, their skin is not scaly. Nor do they have claws on their toes. Most amphibians prefer to come out at night.

The young undergo what is known as metamorphosis. They pass through a larval, usually aquatic, stage before drastically changing form and becoming adults.

Ohio is fortunate in having many species of amphibians. Although generally inconspicuous most of the year, during the breeding season, especially following a warm, early spring rain, amphibians appear in great numbers seemingly out of nowhere. Those which migrate in mass to the breeding grounds are often killed in large numbers trying to cross roads. Fortunately, however, nature for the most part has endowed these little animals with the ability to reproduce in great numbers.

Amphibian eggs must remain moist if they are to hatch. The eggs do not have shells but rather are covered with a jelly-like substance. Amphibians lay eggs singly, in masses, or in strings in the water or in some other moist place.

As with all Ohio wildlife, the only real threat to their continued existence is habitat degradation and destruction. Only by conserving suitable habitat today will we enable future generations to study and enjoy Ohio's amphibians.



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DIVISION OF WILDLIFE

SALAMANDERS

Frogs and toads make themselves known with their loud calling, but salamanders are voiceless and shy. They often go unnoticed, but there are more salamanders in North America than in all the rest of the world together. They prefer to spend their daylight hours hiding beneath rocks or in other moist places. They move about during breeding season and some congregate in masses, but only for a brief time. Some have elaborate courting rituals.

Many of Ohio's salamanders measure only a few inches in length. They range in color from earth tones to red, orange, and yellow and often have spots, stripes, or dots. Most of Ohio's 25 species of salamanders belong to either the Lungless Family (Plethodontidae) or the Mole Family (Ambystomatidae). Some salamanders retain gills throughout life. Others have both gills and lungs. Some start with gills and later develop lungs. Four of these species have been placed on the ODNR Division of Wildlife endangered species list because they are so scarce.

MOLE SALAMANDERS

The family Ambystomatidae includes the large, stout-bodied mole salamanders which spend most of their lives underground. All have well-developed lungs. Mole salamanders lack the nasolabial groove. The Eastern Tiger, Spotted, Marbled, Jefferson, Blue-spotted, streamside and Small-mouthed Salamanders all belong to this family.

LUNGLESS SALAMANDERS

The lungless salamanders of the family Plethodontidae are slender and have neither gills nor lungs. Oxygen is absorbed through the moist skin and the lining of the mouth. Lungless salamanders should not be held in one's hands for more than a few seconds. If their skin should dry out, they will suffocate due to their inability to absorb oxygen through their skin. Air is drawn through the nostrils into the mouth by means of muscles in the throat. Some lungless salamanders will drown if submerged in water for long periods of time. Members of this family are also characterized by a shallow groove, the nasolabial groove, from the nostril down to the lip, although this feature is not always conspicuous.

UNISEXUAL MOLE SALAMANDERS

Ambystoma sp.

Length 4-7 in. (10-17.5 cm.).

In eons past, hybridization of mole salamander species produced a dizzying array of salamanders having characteristics of two or more species. Today, thousands of generations later, these all female salamanders use the sperm from either Blue-spotted, Jefferson, Smallmouthed, or Tiger salamanders to produce offspring in a reproductive system that is unique to this group. In many cases these offspring have one, two, or even three extra sets of chromosomes and can closely resemble any of the parental species. It is usually impossible to give a species name to these unisexual salamanders without complicated DNA analysis. They range over the western two-thirds of the state and are the most common group of mole salamanders in Ohio.

EASTERN HELLBENDER *Cryptobranchus alleganiensis*

Length 11½ - 27 in. (30-51 cm.)

In spite of its formidable appearance, the Eastern Hellbender is quite harmless. Hellbenders can reach 27" in length making it the largest amphibian in the state. Found mostly in unglaciated (south and east) Ohio, Hellbenders prefer large, swift flowing streams where they hide during the day under large rocks.

5 Although Hellbenders have lungs, the major organ of oxygen/carbon dioxide exchange is the loose wrinkled skin. Adult Hellbenders do not have gills but they do have a single gill slit located on each side of the neck. They breed in late August or September. The female lays up to 500 eggs in a nest the male excavates under a large flat rock. Sometimes several females use the same nest. Hellbenders differ from other salamanders in that the male does not fertilize the eggs until after they have been laid. Young Hellbenders hatch in two to three months and retain their gills until they are about 1½ years old.



ENDANGERED

COMMON MUDPUPPY *Necturus maculosus*

Length 8-13 in. (20-33 cm.)

Mudpuppies inhabit Lake Erie, large rivers, and streams, throughout Ohio. Since they are essentially nocturnal and will tolerate deep, muddy water, they are seldom seen. They feed on crayfish, aquatic insects, and just about anything else they can scavenge. Notice the broad, flattened head, the distinctive, squarish snout, tiny inconspicuous eyes, and the bushy red gills. These give the mudpuppy a sinister appearance. Despite their looks, Mudpuppies are completely harmless to people.

Young Mudpuppies mature when they are about five years old and eight inches long. They never undergo complete metamorphosis and retain their gills throughout life.



RED-SPOTTED NEWT *Notophthalmus viridescens*

Length 3 - 4 in. (7.5-10 cm.)

Although most salamanders do not become land dwellers until they have reached a terrestrial juvenile stage, just the opposite is true with newts. About three or four months after hatching, the tiny larva loses its gills, acquires lungs, and begins life on land in the Red Eft immature state. Unlike the adult newt, the eft's bright red-orange skin is somewhat dry and rough. Its tail is rounded, much like a lizard's, rather than wedge-shaped.

During the next two to three years, it will forage on the forest floor, often wandering about during the day, especially during or just after a rain. Although it is conspicuous during this Red Eft stage, other animals seldom bother it because its skin glands produce irritating secretions.

During the third year of its life, a remarkable transition occurs. The skin becomes slimy and changes from orange to olive green. The tail becomes broad and wedge-shaped, and the body looks more like that of a salamander than a lizard. At this point, the salamander returns to water to breed and remains there for the rest of its life as a mature Red-spotted Newt.

Newts occur sporadically throughout our state in permanent or semi-permanent bodies of water bordered by relatively undisturbed woodlands.



Red Eft (immature newt)

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Family Salamandridae

STREAMSIDE SALAMANDER *Ambystoma barbouri*

Length 4½ – 5½ in. (11.5-14 cm.)

It is almost identical to the Small-mouthed Salamander in appearance, but differs in several small, important characteristics. Unlike most members of this family, the streamside prefers to breed in headwater streams lacking predatory fish, rather than ponds. Eggs are attached singly to the underside of rocks in the stream. The Streamside Salamander occurs only in southwestern Ohio and is often seen crossing roads to enter streams in February and March.



JEFFERSON SALAMANDER *Ambystoma jeffersonianum*

Length 4½– 7 in. (11.5-17.5 cm.)

This salamander looks somewhat like the spotted salamander species without the yellow spots. Notice, however, the long toes and the sprinkling of small silver-blue specks concentrated on the sides of the body on younger specimens.

It lives in moist woodlands throughout most of the state. It is very secretive and seldom seen except in early spring when it enters shallow woodland breeding ponds.

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The Jefferson Salamander was named in honor of Jefferson College, and hence, indirectly for Thomas Jefferson. He was not only a famous statesman and president, but was also an accomplished naturalist.



BLUE-SPOTTED SALAMANDER *Ambystoma laterale*

Length 4 – 6 in. (10-15 cm.)

The Blue-spotted Salamander very closely resembles the Jefferson Salamander in appearance. However, it can usually be identified by a profusion of blue flecks on its bluish-black body. This produces an impression of the coloration of old-fashioned enamelware. The Jefferson Salamander has relatively few bluish flecks and these are, for the most part, confined along the creature's sides. Blue-spotted Salamanders are only found in a few locations in extreme north-western counties. The Blue-spotted Salamander is part of a complex of all-female populations that have genetic contributions from two or more species, including Jefferson, Small-mouthed, and (occasionally) Tiger Salamanders. These individuals often have more than the usual two sets of chromosomes and outward characteristics of one or more of these species. All of these "unisexual salamanders" have some of the genes of the Blue-spotted Salamander, however, so some amount of blue-flecking is often visible.



ENDANGERED

SPOTTED SALAMANDER *Ambystoma maculatum*

Length 6 - 7 $\frac{3}{4}$ in. (15-20 cm.)

Spotted Salamanders are found throughout Ohio in low-lying moist woodlands adjacent to swamps, ponds, and creeks. Because of their secretive nature and their love for tunneling underground, they are seldom seen except in early spring. Then they migrate in large numbers to breeding ponds. Even then, they are active only at night. Often the only evidence of their presence is a fist-sized egg mass containing less than 100 eggs which is attached to a submerged stick or plant. How does a six-inch salamander pass a fist-sized egg mass? The eggs are not that large when laid, but the jelly-like substance that covers them swells when the eggs come in contact with the water.

This large, chunky salamander has two irregular rows of yellow or greenish-yellow spots. Occasionally, the spots on the back of the head are orange.



MARBLED SALAMANDER *Ambystoma opacum*

Length 3½– 4½ in. (9–11.5 cm.)

The male's bright white bands on a black body and the female's grayish-white on black make this one of our more distinctively marked salamanders. However, a rare individual may lack the white bands which complicates an otherwise easy identification. Marbled Salamanders make their homes in a variety of habitats from dry wooded slopes to moist sandy areas. They are fond of hiding under rocks and logs on wooded slopes, sometimes in surprisingly dry places. Marbled Salamanders are distributed along some of the lakeshore counties, but are more common in southern Ohio.

Marbled Salamanders breed in the fall. They migrate to low-lying wooded areas and swamps to perform their courtship. They differ from other mole salamanders in that their courtship takes place on land rather than in water. Females lay eggs under logs or other debris along the sides of dried up temporary ponds. The female remains with the eggs until the autumn rains refill the pool, causing the eggs to hatch.



SMALL-MOUTHED SALAMANDER *Ambystoma texanum*

Length 4½ - 7½ in. (11.5-14 cm.)

Named for its conspicuously small mouth, this animal also has a relatively small, narrow head. Its dark earth-tone color may be accented with light flecks of pigment, especially along its sides and bottom.

The Small-mouthed Salamander is one of the least particular in its choice of habitat. It can be found in just about any situation throughout all but the extreme eastern edge of the state, and like most members of this family it breeds in temporary ponds and wetlands.

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Family Ambystomatidae
MOLE

EASTERN TIGER SALAMANDER *Ambystoma tigrinum*

Length 7 - 8¼ in. (18-21 cm.)

Like the smaller Spotted Salamander, Tiger Salamanders are burrowers making sandy or friable soils a key habitat requirement. Occasionally they can be seen during fall rains or during their breeding season in late winter and early spring. The massive migration of adult Tiger Salamanders to larger bodies of water where they breed is a spectacular sight.

Once at their breeding grounds, these salamanders engage in an elaborate pushing, nose-rubbing courtship dance during which the male deposits sperm packets. The female takes these into her body to fertilize her eggs. After she lays her eggs, the egg mass swells to the size of a fist. The young salamanders hatch in about three weeks and live as juveniles for a period of two to three years. They eventually lose their external gills and become full adults in July.



GREEN SALAMANDER *Aneides aeneus*

Length 3¼ - 5 in. (8-13 cm.)

One of our more interesting salamanders, the Green Salamander, is limited in Ohio to a very few rock ledges in Adams, Lawrence and Scioto counties. It prefers the deep moist cracks in otherwise mostly dry limestone and sandstone cliffs. Its flattened head and body are well suited for moving about in such tight places. Here the Green Salamander spends the day hiding, but as night approaches, it ventures out onto the face of the cliff and adjacent trees in search of food.

The tiny, round eggs number from 10 to 20 and are laid in late summer within crevices of the cliff. The female stays with the eggs until they hatch, but shows little or no parental care.

This salamander is rare in Ohio and is listed as endangered by the Division of Wildlife. This is a secretive species and additional populations are occasionally discovered.



ENDANGERED

NORTHERN TWO-LINED SALAMANDER *Eurycea bislineata*

SOUTHERN TWO-LINED SALAMANDER *Eurycea cirrigera*

Length 2½ - 3¾ in. (6.5-9.5 cm.)

These are common brookside inhabitants found in all but the northwestern quarter of our state. They prefer small rocky woodland streams as well as springs and seeps, where they spends the day hiding beneath flat rocks and logs. Like the Northern Dusky Salamander, with which they often associate, two-lined salamanders are very abundant. They are easy to find but extremely difficult to catch and hold.

As its name implies, the Two-lined Salamander has two dark lines, one on either side of its bright yellow or golden brown back.

The Northern Two-lined Salamander (*E. bislineata*) is typically found north of Interstate 70, while the Southern Two-lined Salamander (*E. cirrigera*) occupies the southern portion of the state.



LONG-TAILED SALAMANDER *Eurycea longicauda*

Length 4 – 6½ in. (10-16.5 cm.)

This is a strikingly beautiful salamander with a distinctive long tail. The tail accounts for more than half the total length of the mature adult while young salamanders have relatively short tails.

For the most part, the Long-tailed Salamanders are restricted to heavily wooded, hilly regions. They prefer wet shale banks and other seep areas. They are most often found hiding under stones or logs. They may also be encountered under such objects along clear, flowing woodland streams.

Little is known about the life history of the Long-tailed Salamander, but it probably closely parallels that of other members of the same genus, such as the Two-lined Salamander.



CAVE SALAMANDER *Eurycea lucifuga*

Length 4-6 in. (10-15 cm.)

The Cave Salamander occurs in Adams, Hamilton and Butler counties. Because of its highly limited occurrence in Ohio, the Cave Salamander is one of the four salamanders given protection as an endangered species by the Division of Wildlife.

As the name implies, this amphibian prefers the dimly lighted zone near the entrance of wet limestone caves. However, it may also be encountered in wooded areas or along streams with a connection to groundwater, far removed from any known caves.

Cave Salamanders are similar in appearance to the Long-tailed Salamander, but Cave Salamanders are more reddish and have no vertical black markings on the sides of the tail.



ENDANGERED

NORTHERN DUSKY SALAMANDER *Desmognathus fuscus*

Length 2½- 4½ in. (6.5-11.5 cm.)

Northern Dusky Salamanders can be easily recognized by the light-colored line which extends from the back corner of the eye diagonally downward to the back corner of the mouth, and by the hind legs which are conspicuously larger than the front. Otherwise, coloration and body markings are extremely variable.

Northern Dusky Salamanders may be found under rocks and similar debris in shallow woodland brooks, springs, and seepage areas in all but the northwestern quarter of Ohio. The most abundant and easily found of all our native salamanders, they are also one of the most difficult to catch. Northern Dusky Salamanders are alert, slippery, run swiftly, and are surprisingly good jumpers.

Members of this family differ from all other salamanders in having an immovable lower jaw. The dusky must lift its head in order to open its mouth.



ALLEGHENY MOUNTAIN DUSKY SALAMANDER

Length 2¾ - 4 in. (7-10 cm.)

Desmognathus ochrophaeus

Although easily confused with its close cousin the Northern Dusky Salamander, the Mountain Dusky Salamander has a rounded rather than a wedge-shaped tail. Also, look for the light tan or brownish stripe down the back, bordered on either side by a black or very dark brown line. Often there is a row of dark V-shaped spots running down the center of the back. Older specimens may be very dark and lack any pattern whatsoever.

Although they are reported to be somewhat more land-dwelling than most other species of dusky salamanders, they are normally found in the same habitat as the Northern Dusky and the Northern Two-lined Salamanders. In Ohio, Allegheny Mountain Dusky Salamanders are restricted to the extreme northeastern corner of the state.



EASTERN RED-BACKED SALAMANDER *Plethodon cinereus*

Length $2\frac{1}{4}$ - $3\frac{3}{8}$ in. (6-9 cm.)

This is a small, slender salamander which, unlike most other salamanders, has three distinct color phases. In the red-striped phase, a broad reddish-brown stripe bordered by dark pigment runs down the salamander's back; in the leadback phase, the animal is dark gray or gray-black. A red phase is restricted to northeastern Ohio.

Found throughout the state, the Red-backed Salamander is most often seen in early spring beneath rocks and logs, especially on floodplains. Both red-striped and leadback phases may occur together.

This salamander is entirely land-dwelling and usually will not go to water even to breed. The eggs are laid in summer, hanging like a miniature cluster of grapes from the underside of a moist log or rock. The larvae pass through most of their gill-breathing stage while in the egg. When the eggs hatch in late summer, the gills have decreased significantly. Within 24 to 48 hours after hatching, the gills shrivel up and are barely noticeable.



NORTHERN RAVINE SALAMANDER *Plethodon electromorphus*

Length 3 – 4½ in. (7.5-11.5 cm.)

The Northern Ravine Salamander occurs in much of southern and eastern Ohio. As the name implies, it prefers the moist slopes of wooded ravines where it can be found hiding beneath rocks and logs. Like other members of this genus, it's completely land-dwelling. Its eggs are even laid and hatched on land. Although frequently encountered in spring and fall, the Northern Ravine Salamander is seldom seen in midsummer when it's buried deep in the ground seeking moisture.

At first glance, the Northern Ravine Salamander looks quite a bit like the leadback phase of the Red-backed Salamander. However, closer examination will reveal that its belly is a plain dark color and not mottled with black and white specks like those of the Red-backed Salamander.



NORTHERN SLIMY SALAMANDER *Plethodon glutinosus*

Length 4¾ - 6¾ in. (12-17 cm.)

The Northern Slimy Salamander mainly inhabits the unglaciated eastern and southern portion of the state and some areas near the glacial border. Here it likes to hide under or in rotting logs and stumps. Although entirely land-dwelling, it prefers a damp habitat. Moisture is essential for all lungless salamanders. It breathes by means of its moist skin and the lining of the mouth cavity.

The Northern Slimy Salamander is appropriately named. Its skin secretions are exceptionally slimy. When handled, the secretions dry on hands as a dark film that is very difficult to wash off. These secretions deter would-be predators, such as a ring-necked snake.



SPRING SALAMANDER *Gyrinophilus porphyriticus*

Length 4¾ - 7 in. (12-18 cm.)

The status of Spring Salamanders in southeastern Ohio is still somewhat unsettled. There are two different races occurring in our state, both of which are uncommon. The Kentucky Spring Salamander (*Gyrinophilus porphyriticus duryi*) has been reported from Adams, Highland, Pike, and Scioto counties and is a well defined race. The Northern Spring Salamander (*Gyrinophilus porphyriticus porphyriticus*) occurs throughout southeastern counties as well as in Hamilton County.

All Spring Salamanders prefer to live in clear woodland brooks and springs where they hide under large flat stones. Occasionally they may be found hiding under objects in neighboring woodlands, but always in wet places. Larvae are more commonly seen than adults. Adults are known to feed on other salamanders, but little else is known about their life histories.

Both races of Spring Salamanders have a conspicuous light and dark line running from the eye to the nostril. The spring salamanders might be confused with the red and mud salamanders; however, they have no such dark line.



FOUR-TOED SALAMANDER *Hemidactylium scutatum*

Length 2 - 3 in. (5-7.5 cm.)

Although this salamander ranges throughout all of Ohio, it is irregularly distributed and rare over much of this range.

All salamanders have four toes on their front feet except the Mudpuppy and the Four-toed Salamander – other salamanders have five toes. The Four-toed Salamander is also readily identified by its striking snow-white belly, boldly speckled with black.

The Four-toed Salamander usually lives close to boggy woodland ponds and swamps where it hides beneath moss, logs, rocks, slabs of bark and even leaves. Here it lays its eggs in early spring and remains with them until they hatch. The tiny larvae wriggle their way into the water and remain there until completing metamorphosis later that summer. Four-toed Salamanders often overwinter inside of rotting logs, sometimes in very large congregations.



MIDLAND MUD SALAMANDER *Pseudotriton montanus diastictus*

Length 3½– 6 in. (9-15 cm.)

Midland Mud Salamanders are most often encountered under large, flat stones along shallow, sluggish woodland streams, springs, and seeps. As implied by their name, they indeed seem to prefer muddy areas.

In Ohio, this species is somewhat uncommon and is limited to a few counties in the extreme southern part of the state.

Although easily confused with the Northern Red Salamander, the Mud Salamander normally has a brown rather than yellow iris and a few black spots.



NORTHERN RED SALAMANDER *Pseudotriton ruber ruber*

Length 4¼ - 6 in. (11-15 cm.)

The Northern Red Salamander stands out from most of the other large, red-colored salamanders found in Ohio because of its distinctive, bright yellow-gold iris and its stout body.

Northern Reds can be located under logs, moss, and rocks in and around cold, clean springs and adjacent brooks. With the exception of a small colony reported in the vicinity of Cincinnati, these salamanders occur only in the eastern half of the state.

Although adults are usually a striking bright red with scattered black dots, old specimens are less brightly colored, often somewhat purplish.



FROGS AND TOADS

Scientifically speaking, only members of the family Ranidae are true frogs. In Ohio, this includes the:

Ranidae - Bullfrog, Green Frog, Leopard Frog, Pickerel Frog, and Wood Frog.

Hylidae - Gray Treefrogs, Chorus Frogs, Spring Peeper, and Cricket Frog.

Scaphiopodidae - Spadefoot

In general, frogs tend to have moist, relatively smooth skin and leap. Toads have dry, warty skin and hop. Toads are members of the family Bufonidae. Toads have erroneously long been blamed for causing warts and have been associated with witchcraft since earliest times.

In reality, toads are extremely beneficial to man. Toads eat slugs, earthworms, sowbugs, and a wide variety of insects and their larvae. One report estimated that an average toad eats almost 10,000 harmful insects during a three-month period.

The bumps that appear to be warts are actually glands. All of them produce a liquid that burns the sensitive mouth tissues of other animals. This is especially true of the large bump behind each eye-the parotoid gland. Most predators quickly drop a toad because of this irritation and learn to avoid the toad in the future. Toads may also expel water from their bladder when they are picked up. Both substances are completely harmless to people, though they can burn the mouth and eyes.

Attention!

Southern Leopard Frogs have been documented in Athens and Lawrence Counties in the 1960s and Scioto County in 2008. If you find one please take a photo and submit data to the Division of Wildlife. You have found something very special!



AMERICAN TOAD *Anaxyrus americanus*

Length 2 - 3½ in. (5-9 cm.)

American Toads are common in Ohio from urban backyards to remote woodlands. In spring, they congregate in large numbers in just about every available shallow breeding pond.

Their courtship activities go on night and day for a month or more. Then the toads abandon the ponds abruptly, leaving behind long strands of eggs. One female may lay as many as 12,000 eggs. These soon hatch into tiny, jet-black tadpoles. By early June, they transform into pea-size toads that emerge from the ponds by the thousands.

There have been reports of American Toads living to be 30 years of age.

American Toads tend to have one, two, or three warts in each of the dark dorsal spots. Fowler's Toads generally have three or more warts in each of the larger dorsal spots.



FOWLER'S TOAD *Anaxyrus fowleri*

Length 2 - 3 in. (5-7.5 cm.)

This toad was named in honor of S. P. Fowler, an early naturalist from Massachusetts. It appears to be very similar to the American Toad, but there are several differences. Fowler's Toads have a single dark spot on the chest and belly while the chest and belly of the American Toad is usually spotted with a dark pigment. There are no greatly enlarged warts on the thighs of a Fowler's Toad as there are on the American Toad. The Fowler's song is an unmusical nasal w-a-a-a-h lasting from one to four seconds. The American Toad's song is a high-pitched musical trill lasting from six to 30 seconds.

As with the American Toad, Fowler's Toads range throughout the state, but seem to prefer a more sandy habitat than do American Toads. The matter is further complicated because the two toads may cross-breed with each other.



EASTERN SPADEFOOT *Scaphiopus holbrookii*

Length $1\frac{3}{4}$ - $2\frac{1}{4}$ in. (4.5-6 cm.)

The Eastern Spadefoot gets its name from the sickle-shaped horny spade or heel on the bottom of each hind foot used for digging. The Eastern Spadefoot is an accomplished backwards burrower.

Small warts are scattered over its relatively smooth skin. Notice the pupil is vertical rather than horizontal and that there are no conspicuous parotoid glands behind the eyes. The spadefoot eats flies, spiders, caterpillars, earthworms, snails, moths, and crickets. They will breed after a heavy rainfall.

The Eastern Spadefoot is not a toad. It is exceptionally rare, and is known to occur in Athens, Coshocton, Lawrence, Meigs, Morgan, Scioto, Tuscarawas, and Washington counties. This is a state endangered species.



ENDANGERED

EASTERN CRICKET FROG *Acris crepitans*

Length $\frac{3}{8}$ - $1\frac{1}{2}$ in. (1-4 cm.)

Eastern Cricket Frogs are generally restricted to the western two-thirds of Ohio where they inhabit the shores of sparsely vegetated permanent ponds and streams. Although similar in size to its close relative the Chorus Frog, the Cricket Frog has warty rather than smooth skin and a dark triangle between the eyes. Because its color is influenced by its surroundings, there tends to be much variation in color and pattern. It tends to get lighter in color in a bright light, high temperature, or a dry atmosphere. Some have a bright green or brick red stripe on their back. Unlike most other members of the treefrog family, which have broad rounded toe disks, Cricket Frogs' toe disks are no wider than the width of the tips of their toes.

Eastern Cricket Frogs become active in very early spring, but do not begin their courtship serenade until late spring or early summer. Their call consists of a series of sharp clicking notes similar to the sound of someone tapping two marbles together in rapid succession.

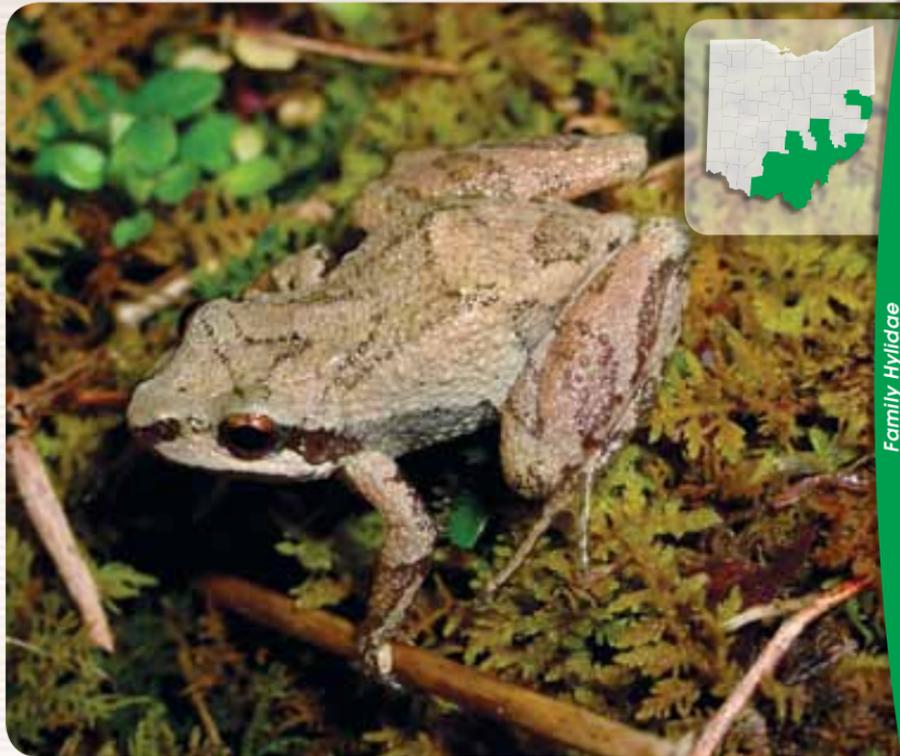


MOUNTAIN CHORUS FROG *Pseudacris brachyphona*

Length 1 - 1¼ in. (2.5-3 cm.)

Although very similar in appearance to the Spring Peeper, the Mountain Chorus Frog has two dark, curved stripes on the back which look like reversed parentheses. On some individuals these lines form a crude "X" or "H" causing it to be easily confused with the Spring Peeper. It also usually bears a dark triangle between the eyes and a white line on the upper lip. Its call is similar to that of the Western Chorus Frog, but distinctly more nasal and higher pitched; with a faster trill rate.

This is a woodland species which occurs in Ohio only in the southeastern hill country, often some distance from the water. These frogs are usually inconspicuous, but in late spring they give themselves away as they call from their breeding pools, springs, brooks, or just about any other shallow body of water.



SPRING PEEPER *Pseudacris crucifer*

Length $\frac{3}{4}$ – $1\frac{1}{4}$ in. (2-3 cm.)

At the first hint of spring, the Spring Peeper makes its appearance, often while traces of ice still remain on the shallow breeding ponds.

Although small enough to sit comfortably on a dime, this tiny tree frog has a shrill, birdlike peep or whistle which can be heard for a surprisingly great distance. The Peeper can easily be identified by the prominent dark "X" marking on its back, as well as by its characteristically rounded tree-frog toe pads.

After the breeding season, Peepers move upland to moist woodlands where they spend the summer hiding among the shrubs and feeding on insects and other small organisms.



WESTERN CHORUS FROG *Pseudacris triseriata*

Length $\frac{3}{4}$ - $1\frac{1}{2}$ in. (2-4 cm.)

The Western Chorus Frog is often confused with the Spring Peeper since they're similar in size and live in similar habitats. Like the Peeper, the Chorus Frog emerges from hibernation with the thawing of the ice and congregates by the hundreds in small ponds. The Chorus Frog's call resembles the sound made by rubbing one's finger over the teeth of a hard plastic comb instead of the birdlike whistle of the Peeper.

There are usually three distinctive dark stripes on the back extending from the nose across the eyes and on along the length of the body. In some populations the three stripes are broken into three rows of spots.

After the breeding season, Chorus Frogs are seldom seen. They probably retreat deep into mud to escape the heat of summer. Originally, this was chiefly a frog of the prairies, but it was able to extend its range as the eastern woodlands were cleared for agriculture.



COPE'S GRAY TREEFROG *Hyla chrysoscelis*

GRAY TREEFROG *Hyla versicolor*

Length 1¼ - 2 in. (3-5 cm.)

The Gray Treefrog is the largest treefrog in the northern states. Both species live in trees and shrubs and change colors from gray-green to a light pearl-gray, depending on the background on which they rest. One of the best camouflaged of all frogs, a Gray Treefrog can blend in so well with a tree that even a careful observer has trouble spotting it.

36 A light-colored spot on each side of the head, just beneath the eyes, does not change color. Also, look for the bright yellow coloration on the inside surface of the thighs. Well developed, sticky adhesive toe discs enable the Gray Treefrog to climb rapidly. This frog often goes through a series of frantic acrobatics trying to catch an insect several feet away. Afterwards, it may dangle by one foot until it can achieve a better balance.

They spend their lives aloft, calling out from trees and shrubs, especially just before or after a summer rain. These frogs seldom come down from the trees except during breeding season when they congregate at ponds. The call of both species is a loud trill, one to three seconds in duration. The Gray Treefrog's trill rate is slower and more melodious than the harsher trill of Cope's Gray.

While the Gray Treefrog is found throughout Ohio, Cope's Gray Treefrog is restricted to the southern one-third of the state.



AMERICAN BULLFROG *Lithobates catesbeianus*

Length 3½ – 6 in. (9-15 cm.)

The American Bullfrog is the largest frog in North America. The deep resonant call of the male Bullfrog can be heard reverberating from Ohio ponds, marshes, and large slow-moving streams from late April through late summer. Sometimes their call can be heard a mile away.

Like most other frogs and toads, its tongue is fastened in the front of the mouth, enabling it to catch a wide variety of creatures. Its diet includes crayfish, insects, mice, small snakes and turtles, and other frogs. There have been reports of finding birds, and even bats in the stomachs of Bullfrogs.

As with its cousin the Green Frog, male and female Bullfrogs are distinguished from each other by the size of the ear drum. Females have ear drums about the size of their eyes; they are much larger in the males. Except during breeding season, when they go through an aggressive, loud, splashing courtship, Bullfrogs are rather solitary and are very territorial. The large tadpoles may take two or three years to complete metamorphosis, in some cases.



NORTHERN GREEN FROG *Lithobates clamitans melanota*

Length $2\frac{1}{4}$ - $3\frac{1}{2}$ in. (6-9 cm.)

This is by far the most abundant and widely distributed frog in Ohio. Although similar in appearance to the Bullfrog, the Green Frog is smaller and has two very pronounced ridges or dorsolateral folds down the back which are not found on Bullfrogs.

The Green Frog does not start singing until long after most other frogs have finished breeding. Its call sounds like the plucking of a bass string on a banjo at well-spaced intervals. When disturbed, this frog utters a short, high pitched cry as it dives into the water. Even as an adult, the Green Frog is very aquatic and stays near water season after season.

The tadpoles closely resemble Bullfrog tadpoles, but are smaller. Green Frog tadpoles metamorphose the same year if they hatch frog eggs laid in May or June. Eggs laid later result in tadpoles that overwinter, then undergo metamorphosis the next spring or summer.



PICKEREL FROG *Lithobates palustris*

Length 1¾ - 3 in. (4.5-7.5 cm.)

Although similar in appearance to the Northern Leopard Frog, the Pickerel Frog is slightly smaller, tends to be light brown instead of green, and has two rows of squarish rather than roundish spots running down its back. Also characteristic is the bright yellowish-orange coloration on the inside surfaces of its hind legs.

Pickerel Frogs tend to favor the cool, clear waters of streams as opposed to the warm, sluggish waters of ponds and lakes. They occur throughout the eastern half of Ohio and all of the counties that border the Ohio River.

They also inhabit the Great Miami River drainage from Logan and Shelby counties south to Miami and Greene counties.

Many predators tend to avoid eating Pickerel Frogs. Their skin secretions are reported to be somewhat toxic, a trait apparently not shared by their close look-alike, the Leopard Frog.



NORTHERN LEOPARD FROG *Lithobates pipiens*

Length 2 - 3½ in. (5-9 cm.)

Northern Leopard Frogs are so named for the black “leopard spots” on their back, sides, and legs. They are fairly common throughout Ohio in a wide variety of habitats, ranging from the margins of lakes and rivers to marshes and wet meadows. During summer, they are often encountered in meadows away from any permanent body of water, hence the common names “Grass Frog” and “Meadow Frog.”

From mid-March through May, ponds, streams, marshes, and even temporarily flooded fields are used for breeding grounds. The male’s call is a low, guttural grunting like the sound produced by rubbing a thumb over a balloon. Leopard Frogs sing even when totally submerged in water.



WOOD FROG *Lithobates sylvaticus*

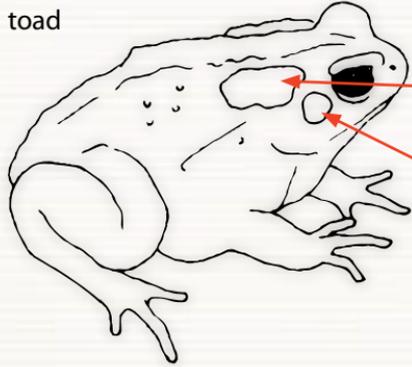
Length 1½ - 2¾ in. (4-7 cm.)

This frog's wide range extends north to the tundra of Labrador and Alaska, farther north than any other North American amphibian. This frog is brown, tan, or pinkish with a dark mask across its eyes. It is our most terrestrial frog, preferring moist woodlands to the ponds more commonly frequented by other frogs. It even hibernates on land beneath leaf litter where it survives partial freezing of its tissues.

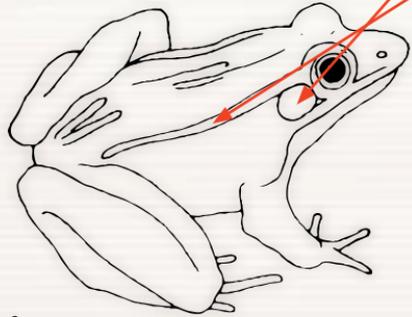
During the brief breeding period in late February to early April, often before the ice has completely melted, woodland ponds may be suddenly full of courting Wood Frogs. Their call is a series of five or six explosive clucking notes. A week or so after breeding, the ponds are completely abandoned by these solitary masked mavericks.



toad



frog



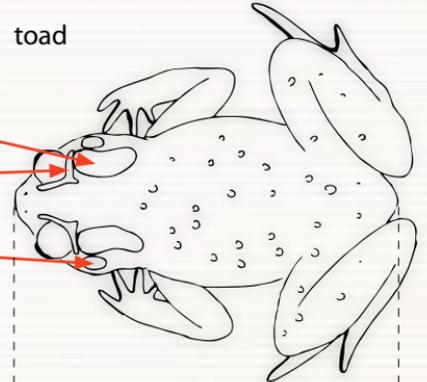
parotoid gland

post-orbital crest

tympanic membrane

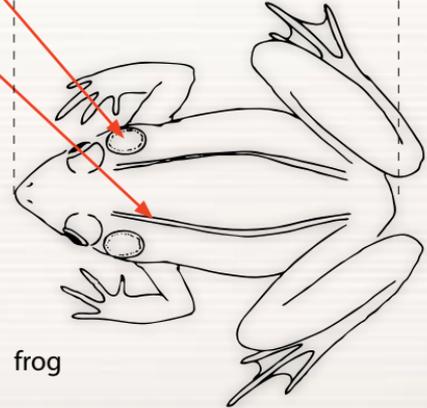
dorsolateral fold

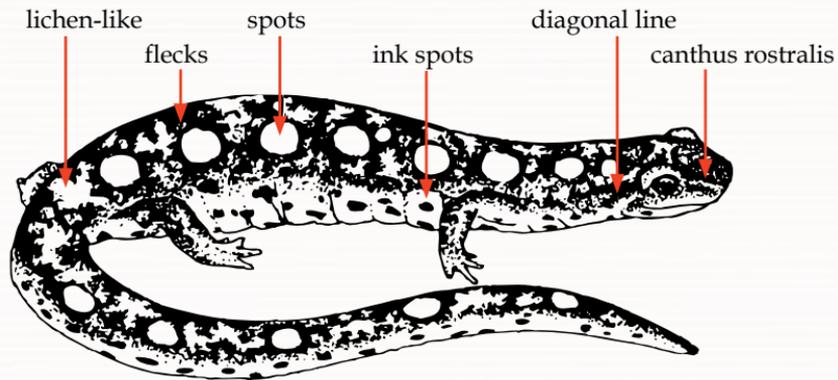
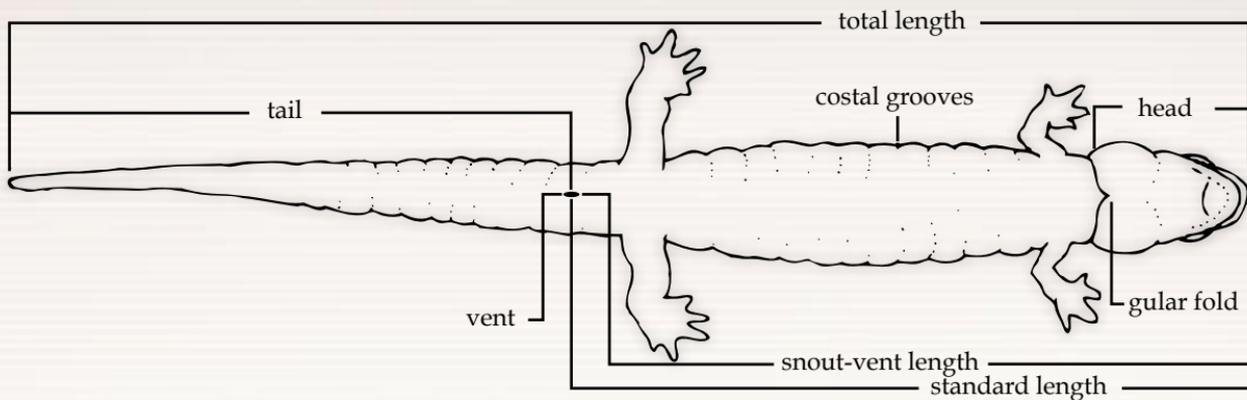
toad



snout-vent length

frog





★ Special thanks to
Jeff Davis, Greg Lipps,
Ralph Pflingsten,
Adam Mann, and
Guy Denny for their
contributions.

RECOMMENDED READING

Ohio Frog and Toad Atlas

by Jeffrey G. Davis and Scott A. Menze

Ohio Biological Survey Miscellaneous Contributions Number 6, 2000
Presents the distribution (includes county maps), abundance,
and life history of 15 species of frogs and toads reported from Ohio.

In Ohio's Backyard: Frogs and Toads

by Jeffrey G. Davis and Scott A. Menze

Ohio Biological Survey 2002.

Includes color photos, distribution maps of Ohio's frogs and
toads, and a CD of their calls.

Salamanders of Ohio

edited by Ralph A. Pfungsten and Floyd L. Downs

Ohio Biological Survey Bulletin, Volume 7, Number 2, 1989

Includes color plates of species and habitats and the life
history and distribution of Ohio's salamanders.

Ohio Salamander Atlas

by Ralph Pfungsten and Timothy O. Matson

Ohio Biological Survey Miscellaneous Contributions Number 9, 2003

Presents the distribution (includes county maps), abundance,
and life history of 28 species of salamanders reported from Ohio.

The Audubon Society Field Guide to American Reptiles & Amphibians

by J.L. Behler and F. Wayne King.

Alfred A. Knopf, 1979

Field guide to North American species

A Field Guide to Reptiles and Amphibians of Eastern and Central North America

by Roger Conant and Joseph T. Collins.

Houghton Mifflin Co., 1998 (revised edition)

Includes color plates, distribution maps
and brief text about each species.

A Natural History of Amphibians

by Robert C. Stebbins and Nathan W. Cohen

Princeton University Press, 1995

LICENSING AND REGULATIONS

The ODNR Division of Wildlife adopted a regulation in May 2000, Ohio Administrative Code (O.A.C.) Section 1501:31-25-04, concerning the possession, purchase, sale, or trade of reptiles and amphibians native to our state.

The purpose of this regulation is to protect and conserve native reptiles and amphibians while maintaining the educational and economic benefits derived from them. Contact your district wildlife office for further information.

WISE WORDS FOR WILDLIFE EDUCATORS

Bringing wild animals into the classroom is a great way to connect students to the natural world. However, before bringing these animals into the classroom, it is important to understand that there are regulations and laws (Revised Code 1532.02), as well as certain permits required for possessing any wild animal in Ohio.

Wild Animal Permits are for scientific study, research or educational purposes and the person collecting must be affiliated with an educational or scientific institution. This permit is issued by the Law Enforcement Section's permit coordinator. The Wild Animal Permit is separated into two sections: an education permit, and a scientific permit. If you are seeking an education permit please note that any animal taken from the wild may not be returned after 30 days

of possession. You must also keep track of dates of possession and relinquishment, where the animal was taken from and, if not returned to the wild, the date of death or name of person to whom the animal was given. If you are seeking a scientific permit, please note that this permit is primarily used for surveys and inventories of wildlife species. Letter permits are to be obtained if you wish to take possession of any state-listed endangered, threatened, or aquatic nuisance species. This requires a letter from the chief of the Division of Wildlife. A \$25 noncommercial propagating license is required if seeking to permanently possess any native amphibians, with the exception of Bullfrogs and Green Frogs which can be harvested with a fishing license.

For further information on this please contact the
Division of Wildlife's Permit Office at
1-800-WILDLIFE.



PUBLICATION FUNDING

Funding for this publication was provided by donations to the state income tax checkoff program, sales of the cardinal license plate and the Ohio Wildlife Legacy Stamp.

To purchase a Legacy Stamp, call the Division of Wildlife at: **1-800-WILDLIFE** or visit the web at **wildohiostamp.com**



To make a donation: go to the second page of the 1040 income tax form for the **tax checkoff program**



To purchase a license plate: visit your local registrar's office or call **BMV** at **1-888-PLATES3**



For more information about Ohio's native wildlife, please contact the Division of Wildlife:

1-800-WILDLIFE

(1-800-750-0750 Ohio Relay TTY only)

wildohio.com

To mail a donation, send to:

Wildlife Diversity Fund

2045 Morse Road Bldg G.
Columbus, OH 43229-6693



OTHER WILDLIFE DIVERSITY-FUNDED BOOKLETS

Pub 5127 - Stream Fishes of Ohio

Pub 5140 - Common Spiders of Ohio

Pub 5204 - Butterflies & Skippers of Ohio

Pub 5320 - Dragonflies & Damselflies of Ohio

Pub 5334 - Sportfish of Ohio

Pub 5344 - Mammals of Ohio

Pub 5349 - Warblers of Ohio

Pub 5354 - Reptiles of Ohio

Pub 5414 - Common Birds of Ohio

Pub 5418 - Waterbirds of Ohio

Pub 5423 - Owls of Ohio

FAST FACTS

- Bullfrogs can live at least nine years in the wild, and captive individuals have survived for 16 years. American Toads have been reported to live for 30 years.
- Some of the deadliest natural toxins occur in frogs. An individual of the golden poison frog, *Phyllobates terribilis*, of Colombia contains enough poison to kill 10,000 mice. Closer to home, both American and Fowler's Toads have glands that hold toxins strong enough to kill dogs that bite into them.
- Few animals are more accomplished jumpers than frogs. Some species can bound over 20 times the length of their body. To match that, a person would have to leap about 100 feet.
- The world's largest amphibian is the Chinese Giant Salamander, *Andrias davidianus*. The biggest individual yet found measured 5' 11" and weighed 143 pounds. The largest North American amphibian is the Two-toed Amphiuma, *Amphiuma means*, of the southeastern U.S. They can approach four feet in length and bite fiercely. In Ohio, Hellbenders hold the title for overall massiveness.
- Brazilian Gold Frogs, *Brachycephalus didactylus*, are possibly the world's smallest amphibian, measuring less than half an inch long. In Ohio, the Spring Peeper is the tiniest, with most individuals averaging about an inch in length.
- The total biomass - overall weight - of Ohio's salamanders exceeds that of all of our other amphibians combined, in spite of the fact that most people never even see one.
- Ohio's most aquatic amphibian species are the Hellbender and Mudpuppy, which rarely if ever leaves the water. Surprisingly, our least aquatic amphibian may be the immature stage of this species, which is known as a Red Eft. Efts range about very dry forested habitats, seldom if ever venturing into water.

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