

In 1995, in recognition of Tennessee's unique natural heritage, the state legislature designated the Tennessee cave salamander as our official State Amphibian. You may be wondering, "What are salamanders and why are they important?" Salamanders are the group of animals, including newts, sirens and amphiumas, that have smooth, moist, porous skin, lay jelly-like eggs and have a long tail. Often they are mistakenly referred to as "spring lizards," when in fact they belong to the group of animals known as amphibians. Unlike lizards, a type of reptile, salamanders lack scales on the body, do not have claws on the toes, and cannot survive far from moisture.

Salamanders are nocturnal and come out from their hiding places during moist nights to hunt for prey. Most species eat large amounts of invertebrates such as worms, insects and snails. A few species, like spring and red salamanders, will even eat other salamanders. Salamanders are equally important as food for many other animals, such as raccoons, opossums, bears, mink, river otter, frogs and snakes. In some places they are the most abundant vertebrate animals in the forest. They are also important as biological indicators as their porous skin is sensitive to environmental toxins. Since many live in both aquatic and terrestrial habitats, scientists use them to monitor for problems in the environment.

Wehrle's salamander are all listed as "In Need of Management." These are only a few of the many salamander species we have in Tennessee, but it would be a shame to lose even one of these unique and remarkable creatures.

What are some of the major challenges facing salamanders today? As more and more people use more resources and require more places to live, habitat destruction and modification are occurring at an alarming rate and are the greatest threats facing salamanders. Another major problem salamanders face is habitat fragmentation; salamanders are unable to move freely between populations or even reach their breeding ponds because of highways and other construction. Introduced species can negatively affect salamanders by direct predation and competition. Chemicals such as pesticides, herbicides, and fertilizers are adversely affecting salamanders in many areas around the world. Other factors that may negatively affect salamanders in Tennessee are climate change, disease, and illegal collection for the pet trade. It is against the law to remove any native animal from the wild in Tennessee without a permit.

Most Tennessee salamanders have a biphasic life cycle, meaning they spend part of their life in a tadpole-like larval stage then change into the adult stage. Many species of salamanders spend the adult stage on land in moist habitats near water, then during the breeding period, the adult salamanders move into the breeding ponds or streams to court and lay eggs. Some salamanders, such as the spotted salamander, are well known for their mass migrations in the spring as they move from their forest habitat to their breeding ponds.

Find more information about salamanders at: Atlas of Amphibians in Tennessee, www.apsu.edu/amatlas Center for North American Herpetology, www.cnah.org The Salamanders of Tennessee, www.tennessee.gov/twra/tamp/salamanders.htm



THREE-TOED AMPHIUMA Amphiuma tridactylum Photo: R. D. Bartlett



HELLBENDER Cryptobranchus alleganiensis Photo: Suzanne Collins, CNAH



MUDPUPPY Necturus maculosus Photo: Suzanne Collins, CNAH



LESSER SIREN Siren intermedia **Photo: Brad Glorioso**



SMALL-MOUTHED SALAMANDER Ambystoma texanum **Photo: Brian Miller**



SPOTTED SALAMANDER Ambystoma maculatum Photo: John Copeland



MARBLED SALAMANDER Ambystoma opacum Photo: John Copeland



MOLE SALAMANDER Ambystoma talpoideum Photo: T. Hibbitts



Eft Photo: Brad Glorioso



EASTERN NEWT Notophthalmus viridescens

Lead morph

Striped morph

Photo: Brad Glorioso

Photo: T. Hibbitts





Salamanders require ponds that have no fish in them because fish eat amphibians! Vernal pools and semi-permanent to permanent ponds are all favorable breeding habitat. Most salamanders lay their eggs and then depart. A few species like the green salamander and marbled salamander stay and help protect their eggs from small predators and fungus. Some species, like the pygmy salamander and seepage salamander, skip the larval stage and the eggs hatch into perfect miniatures of the adults.



Striped morph

Lead morph





TIGER SALAMANDER Ambystoma tigrinum Photo: Brad Glorioso

Tennessee's amphibian diversity is the 4th highest in the nation. Neighboring states of North Carolina, Georgia and Virginia rank 1st, 2nd and 3rd.





NORTHERN SLIMY SALAMANDER Plethodon glutinosus Photo: Brad Glorioso



SEEPAGE SALAMANDER Desmognathus aeneus Photo: Stephen G. Tilley



NORTHERN DUSKY SALAMANDER Desmognathus fuscus Photo: T. Hibbitts



SANTEETLAH DUSKY SALAMANDER Desmognathus santeetlah Photo: Stephen G. Tilley



GREEN SALAMANDER Aneides aeneus Photo: Robert Wayne Van Devender



TELLICO SALAMANDER Plethodon aureolus Photo: Suzanne Collins, CNAH



CUMBERLAND PLATEAU SALAMANDER Plethodon kentucki Photo: Suzanne Collins, CNAH



IMITATOR SALAMANDER Desmognathus imitator Photo: T. Hibbitts



BLUE RIDGE DUSKY SALAMANDER Desmognathus orestes Photo: Robert Wayne Van Devender



OCOEE SALAMANDER Desmognathus ocoee Photo: Stephen G. Tilley





NORTHERN ZIGZAG SALAMANDER Plethodon dorsalis



SOUTHERN RAVINE SALAMANDER Plethodon richmondi Photo: Robert Wayne Van Devender



SEAL SALAMANDER Desmognathus monticola Photo: T. Hibbitts



BLACK-BELLIED SALAMANDER Desmognathus quadramaculatus Photo: Brad Glorioso



BLACK MOUNTAIN SALAMANDER Desmognathus welteri Photo: Stephen G. Tilley



JORDAN'S SALAMANDER Plethodon jordani Photo: T. Hibbitts



NORTHERN GRAY-CHEEKED SALAMANDER Plethodon montanus Photo: T. Hibbitts



RED-LEGGED SALAMANDER Plethodon shermani Photo: Stephen G. Tilley







Tennessee is well known



Photo: M. L. Niemiller



PYGMY SALAMANDER Desmognathus wrighti Photo: T. Hibbitts

SHOVEL-NOSED SALAMANDER Desmognathus marmoratus Photo: Stephen G. Tilley

throughout the scientific community as a particularly hot spot for salamanders. The Great Smoky Mountains National Park has earned the title of "Salamander Capital of the World."

YONAHLOSSEE SALAMANDER Plethodon yonahlossee Photo: T. Hibbitts



WELLER'S SALAMANDER Plethodon welleri Photo: Robert Wayne Van Devender

WEHRLE'S SALAMANDER Plethodon wehrlei Photo: Stephen G. Tilley



FOUR-TOED SALAMANDER Hemidactylium scutatum Photo: Bob English, LEAPS



LONG-TAILED SALAMANDER *Eurycea longicauda* Photo: M. L. Niemiller



CAVE SALAMANDER Eurycea lucifuga Photo: M. L. Niemiller



TENNESSEE CAVE SALAMANDER Gyrinophilus palleucus Photo: M. L. Niemiller



THREE-LINED SALAMANDER Eurycea guttolineata Photo: John White



JUNALUSKA SALAMANDER Eurycea junaluska Photo: Stephen G. Tilley



SOUTHERN TWO-LINED SALAMANDER Eurycea cirrigera Photo: T. Hibbitts



BLUE RIDGE TWO-LINED SALAMANDER Eurycea wilderae Photo: T. Hibbitts



SPRING SALAMANDER Gyrinophilus porhpyriticus Photo: T. Hibbitts



MUD SALAMANDER Pseudotriton montanus Photo: Stephen G. Tilley



RED SALAMANDER Pseudotriton ruber Photo: Brad Glorioso



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THREE-TOED AMPHIUMA (W) Amphiuma tridactylum

The three-toed amphiuma, sometimes referred to as a Congo eel, is a large aquatic salamander that lives in semi-permanent to permanent bodies of water with abundant vegetation. Drainage ditches, sloughs, backwaters and swamps are all favorite habitat. Adults are bi-colored, with a black, slate or brownish back and a lighter gray belly. The four limbs are extremely thin and elongated and each foot has three toes. The tail is laterally compressed to aid in swimming. There are no external gills. The three-toed amphiuma, our longest salamander, averages from 46-106 cm. Amphiumas feed upon crayfish, earthworms, fish, terrestrial and aquatic insects, spiders, snails, skinks and a small amount of vegetation. They emerge from their burrows at night to forage, especially during heavy rains. Amphiumas are found only in the western part of the state in the Mississippi Alluvial Floodplain.

HELLBENDER \Box (M, E) *Cryptobranchus alleganiensis*

Tennessee's heaviest salamander (30-74 cm), the hellbender is a large aquatic species that inhabits clean, fast flowing streams and rivers, where large flat rocks provide plenty of cover. Small eyes in a large flattened head, slimy skin secretions and loose folds of skin along the sides of the body contribute to the bizarre look of this salamander. Hellbenders are nocturnal and search at night for small fish and crayfish. Occasionally they are caught by fishermen using baited hooks. A harmless species, this once abundant salamander has declined throughout much of its range due to impoundments and pollution. It occurs sporadically throughout the eastern two-thirds of Tennessee and is currently listed by the State of Tennessee as being "In Need of Management."

MUDPUPPY (W, M, E) *Necturus maculosus*

The mudpuppy is an aquatic salamander that inhabits large streams with fast-flowing water and rocky bottoms, and also reservoirs. They reside beneath logs and rocks during the day and emerge to feed at night. They are fairly large (20-49 cm) and have dark red, bushy gills their entire life. A dark line extends through the eye to the gills and the brown, rusty brown, gray or black body has large dark bluish-black to black splotches. The underbelly is whitish to gray and may also be spotted. They also have a very snubbed nose. Mudpuppies prey upon a large variety of creatures including crayfish, insects, mollusks, fish and amphibians. The mudpuppy is found throughout Tennessee except for the northwestern corner of the state.

LESSER SIREN (W, M) Siren intermedia

This eel-like aquatic salamander lacks hind legs, has an elongated body (18-69 cm), branching gills and a dorsal fin extending from the vent to the tail tip. They are olive-green, gravish-blue or black, often with scattered brown or black spots on the back and may have white to yellowish flecks on the sides. They live in semi-permanent to permanent bodies of water, particularly floodplain pools, marshes, swamps, sloughs, backwaters, ditches, vegetation-choked sluggish creeks and occasionally farm ponds. They feed upon algae, particularly filamentous species, vascular plants, invertebrates and the eggs of amphibians, even other siren eggs. They are found in the northwestern and southwestern corners of Tennessee, although further research is needed to determine the full range, life history and conservation needs of the lesser siren in Tennessee.

SMALL-MOUTHED SALAMANDER (W, M) Ambystoma texanum STREAMSIDE SALAMANDER [(M) (not pictured) Ambystoma barbouri

These closely related, similar looking salamanders are usually a brownish-gray to grayish black with numerous small, light gray speckles that sometimes merge on the sides to form a lichen-like pattern. Both are mediumsized salamanders (11-19 cm) with a stocky body and a small head. The small-mouthed salamander is found mainly in western Tennessee. There is, however, a population extending into northern Middle Tennessee from Kentucky. The streamside salamander is found in sporadic populations throughout Middle Tennessee, primarily in limestone habitats. The small-mouthed salamander is found mainly in bottomland forests associated with wetlands or floodplains; the streamside salamander prefers upland deciduous forests with rolling hills, but may also occur in streams.

SPOTTED SALAMANDER (W, M, E)

NORTHERN DUSKY SALAMANDER (W, M, E) Desmognathus fuscus

SANTEETLAH DUSKY SALAMANDER 🔲 (E) Desmognathus santeetlah

SPOTTED DUSKY SALAMANDER 📕 (W, M) (not pictured) Desmognathus conanti

These three closely related dusky salamander species are best distinguished by their ranges. The Santeetlah dusky is found in a small pocket of the southern Appalachians; the northern dusky is found from our eastern borders into Middle Tennessee; and the spotted dusky is found from Middle into West Tennessee. These salamanders are generally very abundant where they occur. They are medium sized (6-14 cm), generally a dusky brown color, may have some spotting on the dorsum, and have a light line extending from the corner of the eye to the jaw. In the northern dusky the tail is laterally compressed and strongly keeled, whereas the tail is moderately keeled in both the spotted and Santeetlah dusky salamanders. The spotted dusky often has 6 to 8 pairs of golden to reddish spots on the dorsum and may get slightly larger (6.4-12.7 cm) than the northern or Santeetlah dusky. The Santeetlah dusky is slightly smaller (6.4-9.5 cm) and has a yellowish or greenish wash upon the belly. These salamanders live in a variety of aquatic and semi-forested habitats.

GREEN SALAMANDER (M, E)

Aneides aeneus

Beautiful, and rarely seen, the green salamander (8-14 cm) spends much of its time on sandstone, or sometimes limestone, rock faces with many crevices, or more rarely in trees or under the loose bark of fallen timber. This salamander has a black base color with a yellowish-green, lichen-like pattern upon the back. It has a flattened body, long legs and square toe tips, all adaptations for living on cliffs. Females of this species deposit their eggs in moist crevices in the rock face and will actively protect their eggs from small predators and fungi. The range of this species is rather limited in Tennessee, being confined mainly to the Cumberland Mountain, Highland Rim and Cumberland Plateau physiographic provinces.

TELLICO SALAMANDER (E) Plethodon aureolus

Once considered a sub-species of Plethodon glutinosus, the Tellico salamander is a small (10-15.1 cm), grayishblack to black species with numerous brassy flecks on the dorsum. The sides may have a greater concentration of white or yellow spotting, underneath the chin is lighter colored and the tail is round in cross-section. Little is known about the habitat of this species that inhabits both mountainous and lowland forests. This salamander is known only to occur in the southeastern corner of the state in Polk and Monroe counties. It is listed in Tennessee as "In Need of Management."

CUMBERLAND PLATEAU SALAMANDER (E) Plethodon kentucki

The Cumberland Plateau salamander closely resembles the northern slimy salamander, but is slightly smaller ranging from 9.5-17 cm, has a lighter chin and throat, and fewer and smaller dorsal spots. The dorsum is black and has small white spots that increase in size on the sides. This is a forest species that hides beneath rocks and logs during the day and comes out to forage among the leaf litter on wet or rainy nights. The Cumberland Plateau salamander is found only along the Tennessee-Kentucky border in the Cumberland Plateau Physiographic Province in Tennessee. It is listed in Tennessee as "In Need of Management."

IMITATOR SALAMANDER (E) Desmognathus imitator BLUE RIDGE DUSKY SALAMANDER (E) Desmognathus orestes OCOEE SALAMANDER (E) Desmognathus ocoee ALLEGHANY MOUNTAIN DUSKY SALAMANDER (E) (not pictured) Desmognathus ochrophaeus CAROLINA MOUNTAIN DUSKY SALAMANDER (E) (not pictured) Desmognathus carolinensis CUMBERLAND DUSKY SALAMANDER (E) (not pictured) Desmognathus abditus Very similar in size, shape, colors and patterns, this group of closely related salamanders can best be told apart by looking at geographic ranges or through genetic analyses by scientists. Patterning on the back may range from stripes or wavy lines to blotches. Colors may range from reds and oranges to yellows and browns. Male salamanders of all these species have well-developed jaw musculature. Adults of these species generally average between 7-11 cm. Often located near streams and seepages at lower elevations, these species may be found on the forest floor at higher elevations. These salamanders occur in limited ranges within the southern Appalachians. The Carolina mountain dusky salamander and the imitator salamander are found midway along the Tennessee-North Carolina border; the Allegheny mountain dusky salamander is found in the northern Cumberland Plateau; the Ocoee salamander is found in the southeastern corner of Tennessee in the Cumberland Plateau and Blue Ridge Mountain sections; the Cumberland dusky salamander is found in the middle Cumberland Plateau; and the Blue Ridge dusky salamander is found in the northeastern corner of Tennessee.

WELLER'S SALAMANDER (E) Plethodon welleri

Weller's salamander is a small species (6.4-9.2 cm) that is found only in the high elevations of northeastern Tennessee. It has a black dorsum with large brassy to coppery striations or blotches that give it a metallic look. The underbelly is dark with fine light mottling. This salamander has a strong association with the spruce-fir forests of the southern Appalachians. It is currently listed in Tennessee as "In Need of Management."

WEHRLE'S SALAMANDER (E) *Plethodon wehrlei*

Wehrle's salamanders are a large (10-17 cm) species of Plethodontid salamander. They have a dorsum of dark brown to black and the sides have a heavy mottling of bluish-white to yellow spots that may fuse to form larger splotches or bands. The toes on the hindfeet of Wehrle's salamanders are strongly webbed. This salamander occurs only on hilly forested slopes and mountainous terrain and is strongly associated with spruce-yellow birch and mixed deciduous forested habitats. Wehrle's salamander is listed as "In Need of Management" in Tennessee and is found only in the northeastern corner of the state near the Kentucky border.

FOUR-TOED SALAMANDER (M, E) Hemidactylium scutatum

This salamander is one of the easiest to identify. It is small (5-10 cm), has only four toes on the hind legs (most salamanders have 5) and has a distinct constriction at the base of the tail. The belly is stark white mottled with black spots or blotches. The dorsum is a rusty-brown; the sides are grayish and often have dark flecks. Statelisted as "In Need of Management," the four-toed salamander lives in moist, wetland habitats. Females lay their eggs within damp moss (sphagnum is most favored), often in communal nests. This salamander is found sporadically throughout the eastern two-thirds of Tennessee.

LONG-TAILED SALAMANDER 🔲 (W, M, E) Eurycea longicauda

Long-tailed salamanders are well named as the tail of this salamander makes up more than 60-65% of its total length (10-20 cm). Resembling the cave salamander, the long-tailed salamander has a yellowish-orange to yellowish-brown dorsum marked with numerous black spots. The spots sometimes fuse to form irregular lines or discontinuous lines, and often fuse on the tail to form a herringbone pattern. Long-tailed salamanders are primarily associated with limestone and often live beneath rocks and logs close to shaded seepages, springs or streams. It is found throughout the eastern two-thirds of Tennessee.

CAVE SALAMANDER (M, E) Eurycea lucifuga

One of our more colorful salamanders, the cave salamander is found in karst habitat throughout the eastern two-thirds of the state. Bright orange to red, it has irregular black spots on the dorsum. The underside is white to yellowish with no markings. The body is elongated and slender with the prehensile tail making up more than 60% of the body length. The head is large and flattened and the eyes bulge out of the head. These salamanders range in size from 10-20 cm. Cave salamanders may produce a noxious secretion from the tail if bothered, and when attacked, they will coil their body around and tuck their head underneath the base of the tail, then wriggle the tail to distract the predator. Like many species that use this defensive strategy, the cave salamander can regenerate the tail if part of it is broken off during an attack.

TENNESSEE CAVE SALAMANDER (M, E) *Gyrinophilus palleucus*

BERRY CAVE SALAMANDER *Gyrinophilus* gulolineatus

A long-bodied salamander (10-23 cm) with a flattened head, slightly upturned snout and three large feathery gills on each side, the Tennessee and Berry Cave salamanders are two of our more unique species. These salamanders spend their entire life in a "neotenic" or larval form and even reproduce in this form. In 1995, the Tennessee cave salamander, Gyrinophilus palleucus, was designated by the Tennessee legislature as our State Amphibian. Living exclusively within a few cave systems, this salamander is listed in Tennessee as "Threatened." The range for this salamander is very restricted; it is found only in Tennessee, Alabama and Georgia. The Tennessee and Berry Cave salamanders live in limestone cave systems containing streams in central and eastern Tennessee. What has been regarded as a single species in Tennessee actually may represent three or four geologically and genetically separate species

Found statewide in Tennessee, this large (15-25 cm) attractive salamander has a dark purplish-black, steel gray or black body. There are two irregular rows of bright yellow to yellowish-orange spots starting on the head and extending down the back to the tip of the tail. These salamanders migrate in large masses in the spring to breeding ponds during the first warm rains and on foggy nights when moisture is high. They breed in fish-free vernal ponds, swamps, roadside ditches and flooded tire ruts; they may also breed in permanent ponds where no fish have been introduced. Throughout the rest of the year they live in bottomland forests, floodplains, upland forests and mature deciduous woods containing vernal ponds.

MARBLED SALAMANDER (W, M, E) Ambystoma opacum

The marbled salamander looks like it just came out of the chrome plating shop with its metallic silvery-white to gray bands of color on the dorsum upon a black body. A medium sized (11.2-19.7 cm), stout-bodied salamander, males and females can be told apart by the color of their crossbands; males have silvery-white bands, while females have gray bands. This salamander is the only member of its family in Tennessee to mate and lay eggs on land. Females construct nests just below the leaf litter of dried beds of temporary or drying ponds in the fall. Females will often stay to protect the eggs from small predators and fungi. Eggs hatch in the winter or early spring when the nest is flooded as the pond waters rise during spring rains.

MOLE SALAMANDER (W, M, E) Ambystoma talpoideum

Mole salamanders are one of the few salamanders in Tennessee that may exist either as terrestrial adults or as aquatic, gilled, breeding larva (neoteny). These salamanders have a short, stocky body (8-12 cm), rounded head, short tail and short, stocky legs. They may vary in color from light gray to light brown, dark gray or black; light gray specks upon the back and sides may be unnoticeable in many specimens. The juveniles and adults of this species have a special gland (the parotoid gland) that produces a noxious secretion. Adults breed in temporary to permanent bodies of water that do not have fish. Terrestrial adults of this species are most often found within floodplain forests or in upland forests close to breeding sites. This species is found throughout the western third of the state, with scattered populations found throughout the rest of the state.

TIGER SALAMANDER (W, M, E) Ambystoma tigrinum

Our largest terrestrial salamander, the tiger salamander may range from 18-35 cm. It has a large stocky body with stocky limbs and a broad head. The color and pattern of the tiger salamander is extremely variable but consists of yellow, greenish, brown or bronzy spots or striations on a base color of dark brown or grayish-black. As larva, this species exhibits two morphs (phases), a typical and a cannibalistic form. The cannibalistic form has modifications of the head and teeth and is usually larger than the typical form. Tiger salamanders breed in late fall through spring in semi-permanent bodies of water and permanent, fishless ponds. Adults live in burrows in the soil that they often dig themselves. The distribution of this salamander is somewhat sporadic in Middle and East Tennessee, but more studies are needed to determine the true range of this species in the state.

EASTERN NEWT (W, M, E) Notophthalmus viridescens

Upon first glance one thinks these two photographs are of two different species of salamanders. However, these are simply two different forms within the salamanders' life cycle. The eastern newt is often confused for a lizard, particularly in the eft (juvenile) stage. A blaring orange, bright to dull red or brownish body with lighter spots encircled by black with small black specks scattered along the back and sides, and a dry granular skin, makes this salamander easy to spot. During the eft stage, this small salamander (3.5-8.6 cm) is terrestrial and may be found quite far from water. As an adult, this salamander is aquatic and has adapted with an elongated body (6.5-11.2 cm), smoother skin, cryptic coloration and countershading (olive-green above and lighter yellow beneath) and a keeled tail for swimming. The adult salamander has regularly spaced orange spots encircled by black upon the back and scattered small black specks along the back and sides. The bright orange of the eft and the orange circles upon the newt signal their toxic nature to predators. This is a good example of aposematic (warning) coloration in a native salamander.

SOUTHERN RED-BACKED SALAMANDER (E) *Plethodon serratus*

EASTERN RED-BACKED SALAMANDER (E) (not pictured) Plethodon cinereus

The southern and eastern red-backed salamanders are two closely related, similar looking salamander species. Once considered the same species, they were recently separated into two species based upon biochemical analysis. They are both small, slender salamanders; the eastern red-backed salamander ranges from 6.5-12.5 cm, while the southern red-backed salamander is slightly smaller ranging from 6.5-10.5 cm. Both species occur in two color morphs (phases), striped and lead-backed. The striped morph, has an orangish-red, red or more rarely tan, broad stripe that begins at the head and extends onto the tail. The body color is brown to dark brown and the underside is mottled with black and white. The lead-backed morph has no stripe on the back and is uniform in color. These salamanders live in the leaf litter of deciduous, northern conifer and mixed deciduous-conifer forests. The eastern red-backed salamander is restricted to the northeastern corner of the state; the southern red-backed salamander is found only in the southeastern corner of the state along the Tennessee-North Carolina border.

NORTHERN ZIGZAG SALAMANDER (W, M, E) *Plethodon dorsalis*

SOUTHERN ZIGZAG SALAMANDER (E) (not pictured) Plethodon ventralis

The northern zigzag salamander is one of our most abundant species and is primarily found throughout the eastern two-thirds of the state. The similar looking, closely related southern zigzag salamander has a very small range along the eastern border of Tennessee. But as these two were just recently separated into two species, more research is needed to determine the true range of the southern zigzag salamander. Both of these salamanders are relatively small (6-11 cm) and exist in two color morphs (phases). They may be a uniform brownish-gray color (lead morph) or a dark base color with an orange or red zigzag pattern (striped morph) extending down the back that straightens out when it reaches the base of the tail. Both color morphs may have light metallic flecks on the back and sides; the belly is mottled with tiny black, white and orange speckles. These salamanders prefer moist forested slopes, caves and rocky hillsides. Females use underground retreats in which to lay and brood their eggs.

SOUTHERN RAVINE SALAMANDER (E) Plethodon richmondi

A long-bodied salamander (7.5-14.5 cm), the southern ravine salamander has very short legs and a tail that makes up over 50% of its body length. The dorsum is dark brown to black above with a fine mottling of silvery-white to brassy flecks. The underbelly is plain and dark, however there is often light flecking beneath the throat. This salamander lives in ravines and on rocky hillsides. The southern ravine salamander is found in the northeastern corner of Tennessee along the Kentucky, Virginia and North Carolina borders.

SEAL SALAMANDER (E) Desmognathus monticola

This salamander, found in the Appalachian Mountains of East Tennessee, has a light brown to grayish dorsum that often has a darker brown reticulated or mottled pattern. The tail is round at the base but becomes triangular shaped, laterally compressed and keeled towards the end. Seal salamanders generally range from 7.5-15 cm. They prefer hardwood-forested habitat near small to medium-sized rocky streams with well-oxygenated, cool water. They are found in the mountains of the Ridge and Valley and the Blue Ridge Physiographic Provinces.

BLACK-BELLIED SALAMANDER (E) Desmognathus quadramaculatus

The black-bellied salamander is very well named as it has a solid black belly. It is a large species ranging from 9-21 cm. It has a stocky body and the tail is laterally compressed and keeled. The tips of the toes are black and cornified. The dorsum is brown to grayish-black and there is a row of yellowish dots on either side of the body. Black-bellied salamanders are mainly aquatic and live in a variety of habitats ranging from headwaters to large, fast-flowing trout streams. These salamanders are found in the mountains of East Tennessee along the Tennessee-North Carolina border.

BLACK MOUNTAIN DUSKY SALAMANDER (E) Desmognathus welteri

A medium-sized species (7.5-17 cm), the Black Mountain dusky salamander has a light brown dorsum with dark irregular markings. The tail is laterally compressed at the base of the tail and is strongly keeled on the top surface. They have dark, cornified toe tips and the belly is often heavily mottled. Black Mountain dusky salamanders live in moist forests along permanent, small to medium-sized streams. The Black Mountain dusky salamander is found only in the Cumberland Plateau and Cumberland Mountain physiographic provinces in Tennessee. This salamander is listed in Tennessee as "In Need of Management."

THREE-LINED SALAMANDER (W, E) *Eurycea guttolineata*

The three-lined salamander is a long (10-18 cm) slender species. It has a yellowish-orange to orange dorsum with a black stripe along the spine and a dark brown or black stripe along either side of the body. The tail has vertical bands that often fuse to form a wavy stripe. Preferred habitat of the three-lined salamander in Tennessee is beneath logs or other cover objects nearby or in flooded forest habitats along the floodplain, shaded seeps, streams, bogs and vernal pools. They occur in West Tennessee and in East Tennessee along the North Carolina border.

JUNALUSKA SALAMANDER (E) Eurycea junaluska

This small (7.5-10 cm), slender salamander resembles the southern two-lined salamander at first glance. But a shorter tail, longer forelimbs, and no distinct black stripes on the sides, distinguishes this from the southernlined salamander. The yellowish-orange body is often covered with brown mottling and the sides may have dark blotches or wavy lines that may form a vague line. These salamanders live under large rocks and beneath logs in and around large creeks and streams. It has an extremely small range and is found only in the southern Appalachians along the southern counties bordering Tennessee and North Carolina. This salamander is listed in Tennessee as "In Need of Management."

SOUTHERN TWO-LINED SALAMANDER (W, M, E) *Eurycea cirrigera*

BLUE RIDGE TWO-LINED SALAMANDER (E) Eurycea wilderae

The southern and Blue Ridge two-lined salamanders typically live beneath rocks and logs along the edges of small, rocky streams and seeps, but some individuals may occur far from water on the forest floor. Both slender, delicate-looking species, the southern two-lined ranges from 6.4-11 cm; the Blue Ridge two-lined ranges from 7-12.1 cm. The southern two-lined has a dingy yellow base color with two prominent black lines extending from the eye along the top of either side to the end of the tail. Black spots dot the dorsum between the two lines as well as along the sides. It occurs throughout the state except for the northwestern corner. The Blue Ridge twolined is very similar in appearance but has a brighter yellow, green or orange base color and may have fewer or no black spots on the dorsum or sides. It occurs along the eastern border of our state.

SPRING SALAMANDER (E)

Gyrinophilus porphyriticus

A large (11-21 cm), stout-bodied salamander, the body color ranges from salmon to pinkish-orange with small dark spots or flecks. A light line extends from the eye along a raised ridge to the snout and may be shadowed by a faint gray to black line beneath it. These salamanders are very predatory and often feed upon other salamanders, even their own kind; they also feed upon many invertebrates. Spring salamanders prefer seeps, springs, fish-less headwaters, caves and cave streams. They are found primarily in the eastern half of the state, although one has been reported from West Tennessee.

MUD SALAMANDER (M, E) Pseudotriton montanus

A large (7.5-19.5 cm), stout-bodied species, the mud salamander has an orange-brown to bright crimson dorsum with brown or black spots that are often widely scattered. The tail is short and makes up less than 40% of the total length of the salamander. Mud salamanders inhabit muddy, mucky areas along swamps, seeps, bogs, springs, floodplain forests and headwater streams. They occur throughout Middle and East Tennessee.

RED SALAMANDER (W, M, E) *Pseudotriton ruber*

A very beautiful, stout-bodied species, the red salamander ranges from 9.5-18 cm. It has a short tail and short legs. The dorsum may vary from purplish-brown to bright red and is heavily marked with irregular black spots. The belly is pinkish-red and has scattered black spots. These salamanders are found in a wide variety of habitats ranging from aquatic to terrestrial. It is not unusual to find red salamanders living in old springhouses or inground meter boxes. Headwater streams, seepages, and spring-fed bogs serve as breeding sites. This salamander is found throughout Tennessee, except for the Mississippi Alluvial Plain and portions of the Western Highland Rim physiographic provinces.

NORTHERN SLIMY SALAMANDER (W, M, E) Plethodon glutinosus

WHITE-SPOTTED SLIMY SALAMANDER (E) (not pictured) Plethodon cylindraceus

MISSISSIPPI SLIMY SALAMANDER (W) (not pictured) Plethodon mississippi

These salamanders are well named, for the defensive skin secretions of the tail can be quite slimy, sticky and difficult to remove. These large woodland salamanders (11.5-20.5 cm) are dark-bodied with varying degrees of white, gold or yellow spots, and are often found beneath logs and rocks. Male slimy salamanders are very territorial and will aggressively defend their territory from other male slimy salamanders as well as competing species. These salamanders were considered one species until recently and may best be told apart by the geographical range or biochemical analysis. The white-spotted slimy salamander is found only in the northeastern corner of Tennessee; the northern slimy salamander is found throughout the eastern two-thirds of the state; and the Mississippi slimy salamander is found in the western part of the state, west of the Tennessee River.

SOUTHERN APPALACHIAN SALAMANDER (E) (not pictured) *Plethodon teyahalee*

Closely related to Plethodon glutinosus, the southern Appalachian salamander ranges from 12-20 cm. It has a black to dark bluish-black dorsum with very small white spotting on the dorsum that decreases greatly in occurrence on the sides. The preferred habitat for this species is forested mountain valleys. The southern Appalachian salamander is found in Tennessee along the eastern border of North Carolina.

SEEPAGE SALAMANDER (E)

Desmognathus aeneus

One of the two smallest salamanders in Tennessee (3.8-5.7 cm), the seepage salamander has a yellowish to reddish-brown wavy, or sometimes straight, stripe going down the back. They often have a dark "Y" behind the head and extending onto the midline of the back either in a line or series of dots; they may also have a light circular patch on the top of each thigh. Some individuals may bear a very faint herringbone pattern upon the back, similar to the pygmy salamander. These salamanders live in and around seepage areas and near streams in moist or wet leaf litter, under logs or other surface objects and in moss mats. They are found only in the southeastern corner of the state along the Tennessee-North Carolina border. The seepage salamander is listed in Tennessee as "In Need of Management."



JORDAN'S SALAMANDER (E) *Plethodon jordani* NORTHERN GRAY-CHEEKED SALAMANDER (E)

Plethodon montanus

RED-LEGGED SALAMANDER (E) Plethodon shermani

For many years these three species were considered different races of the same species. But recent biochemical analysis has shown that they are closely related but separate species. All three species are found along the eastern border of Tennessee within the southern Appalachians. Jordan's salamander is found exclusively within the boundaries of the Great Smoky Mountains National Park; the red-legged salamander is found in the very southeastern corner of the state; and the northern gray-cheeked is found in a few counties in northeastern Tennessee. All three are slate gray to purplish-black in color and long-bodied (9-18 cm). The northern gray-cheeked salamander has no distinguishing colors; Jordan's salamander has yellow to red cheek patches; the red-legged salamander has a splash of bright orange to red on the upper side of the legs; however, Tennessee populations lack the orange or red on the legs. This species prefers elevations above 600 meters in cool, moist, forested, mountainous habitats; in the southernmost portion of their range, they may also be found within deep, moist gorges. They may be found beneath logs, rocks and debris during the day and come out at night to forage on the forest floor.

PYGMY SALAMANDER (E) Desmognathus wrighti

The pygmy salamander is one of the smallest species of salamanders in Tennessee. Ranging from 3.7-5.1 cm, this petite attractive species has a dark herringbone pattern on the back over a reddish-brown to coppery-colored stripe. The eyelids are usually a copper color, the belly is flesh-colored and the tail is short and round in cross-section. Pygmy salamanders live at high elevations in spruce-fir forests or in mature moist forested coves at lower elevations. They are found in the Blue Ridge Mountains along the Tennessee-North Carolina border and are listed in Tennessee as "In Need of Management."

SHOVEL-NOSED SALAMANDER (E) Desmognathus marmoratus

The shovel-nosed salamander is a large (8-15 cm), primarily aquatic species that is closely related to and resembles the black-bellied salamander. The dorsum is dark brown to black and may have two rows of irregular vellowish to gravish blotches. The belly is a dark gray with a lighter middle and can be helpful in distinguishing this species from the black-bellied. The tail is laterally compressed and strongly keeled above; the tips of the toes are dark. Shovel-nosed salamanders live in cool, well-oxygenated streams at elevations of 300-1680 m. They can be found along the Unaka Mountain Range in East Tennessee.

YONAHLOSSEE SALAMANDER (E) Plethodon yonahlossee

A strikingly handsome and majestic salamander, the Yonahlossee salamander ranges from 11.5-18 cm. The dorsum is black and covered with large patches of chestnut pigment. In mature animals the patches may fuse into a single large blanket that covers the dorsum from the neck to the base of the tail. The sides of the body, head and tail have gray to silvery-white blotches that often fuse to form a line from the head to the end of the tail. The top of the head, legs and tail are black with small amounts of white to gray flecking. Yonahlossee salamanders produce a slimy secretion from the tail to help discourage predators. This salamander lives in deciduous forests on rocky, moist slopes that are often carpeted with ferns and mosses. They emerge from their burrows at night to actively search for invertebrate prey. The Yonahlossee salamander occurs in the northeastern corner of the state along the Virginia and North Carolina borders.





TENNESSEE GRAND DIVISIONS





For information concerning conservation of salamanders see the following websites:

> AmphibiaWeb: http://elib.cs.berkeley.edu/aw/

Partners in Amphibian and Reptile Conservation: www.parcplace.org