

# Frogs of Anderson County, TN

When it comes to loveable animals, frogs receive high marks from kids and adults alike . There are 14 different kinds of frogs in our area, with some species being much more common than others. A few species are rarely found in Anderson County while others - like the Spring Peeper below - can be heard calling throughout the county. We have not heard one species - the Northern Cricket Frog - in Anderson County since the early 1980s. Learning frog calls is an excellent way to improve your listening skills and is important for helping conserve our local frog populations and other biodiversity. Be sure to check out the Resources Page on the back which lists websites that showcase the calls of Tennessee frogs.



Spring Peeper

Habitat availability and condition are the two most important factors for determining where frog populations are found — froggy cannot go a-courtin’ without the proper environment! This guide will help you identify our local species and also provide resources for improving or creating good frog habitat. Frogs in our area are classified into one of five families based on their characteristics. For example, 5 of our 14 species belong to the treefrog family which is typically characterized by expanded toe tips for climbing and the ability to vary their coloration. The frogs in this guide are organized by family, but keep in mind that frogs are wonderfully diverse and some species may or may not have physical traits or behaviors which precisely conform to their family characteristics.



This schoolyard wetland in Norris, TN is a great habitat for both frogs and kids. The frogs have plenty of food and hiding places and the kids have a wealth of plants and animals to admire and study. With a little work you can have a wetland in your own yard which will attract a variety of interesting critters.



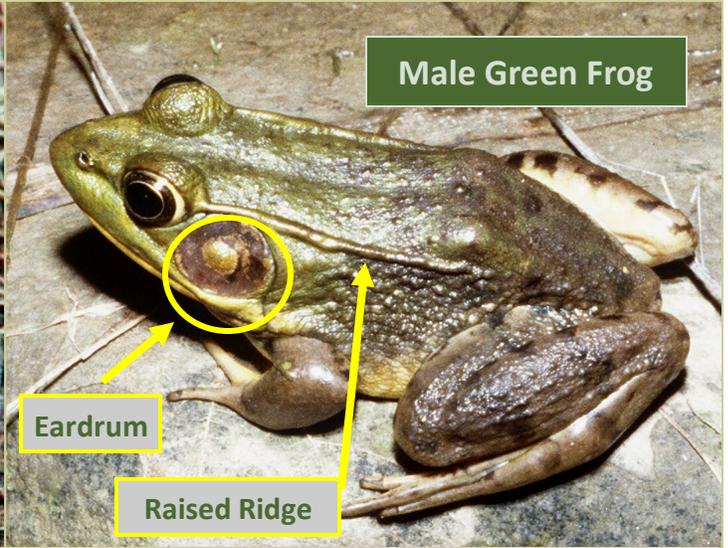
The “frowning” American Toad will alert you to fun facts about frogs.



# True Frog Family—Mostly Large, Long-Legged Leapers



Female Bullfrog



Male Green Frog

Eardrum

Raised Ridge

After hearing the deep bull-like call of a Bullfrog, it is not hard to imagine the origin of its name. It is sometimes confused with the Green Frog, but green frogs have a raised ridge which runs down each side of the body which is absent on bullfrogs. The Green Frog call reminds one of the plucking of a banjo string. Male bullfrogs and green frogs have eardrums that are noticeably larger than the size of their eyes while the eardrums of females are about the same size as the eyes. Because both species are highly adaptable and can live in aquatic conditions ranging from stagnant fish ponds to streams to wetlands, they are relatively common in our area. Since bullfrog tadpoles usually require two years to mature, they (as well as predatory fish) are eliminated from shallow wetlands that dry in late summer. The lack of fish and big hungry bullfrogs that eat almost any animal which will fit in their mouth is actually beneficial for small wetlands and their absence often promotes unique biodiversity in these uncommon habitats.



Southern Leopard Frog



Pickerel Frog

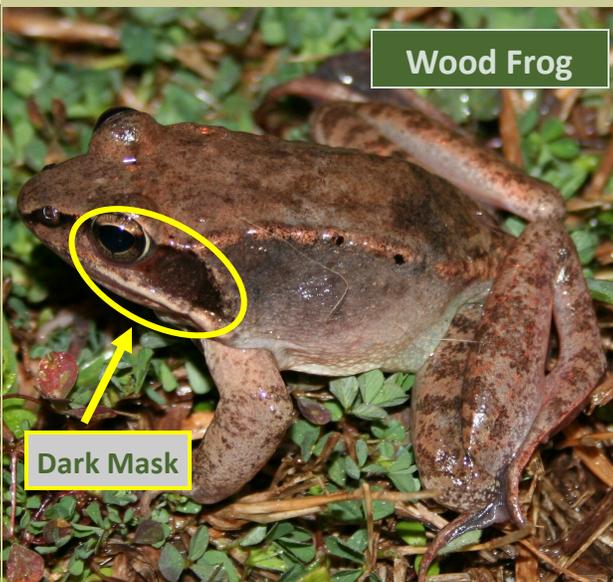
Leopard frogs are rare in Anderson County and the few habitats where they occur need protection. Pickerel frogs are found in wetlands across the county, but population sizes are usually small. Both leopard frogs and pickerel frogs have raised ridges down their sides, but the spots on the back are different. Pickerel frogs have squarish spots whereas the spots on leopard frogs are rounded. Pickerel frogs have yellow on the thighs (see next pg) which is absent on leopard frogs. The muted snoring call of pickerel frogs is very unlike the rapid chuckling and guttural croaks of leopard frogs.



The squarish spots run together on the above Pickerel Frog forming elongated markings down each side. The yellowish thighs could serve as a warning to predators that pickerel frogs are distasteful.



Pickerel frogs may place their front feet over their face when disturbed. Why?



Wood Frog

Dark Mask



Wood frogs are referred to as “explosive breeders” because they hustle into wetlands from surrounding woodlands, stay a week or so to mate and lay eggs, and return to their woodland habitats to feed. Their duck-like quacking and dark mask make them easy to identify. Another character is the pale line along the upper jaw. We have only found wood frogs in the northern part of Anderson County. They may be heard at the Norris schoolyard wetland in mid-to-late February. The students are pointing to a cluster of wood frog egg masses discovered in their wetland. A late freeze caused ice to form over the eggs, but they successfully hatched shortly after the ice thawed. High levels of glucose in the body fluids of wood frogs function like antifreeze and protect them from freezing temperatures.



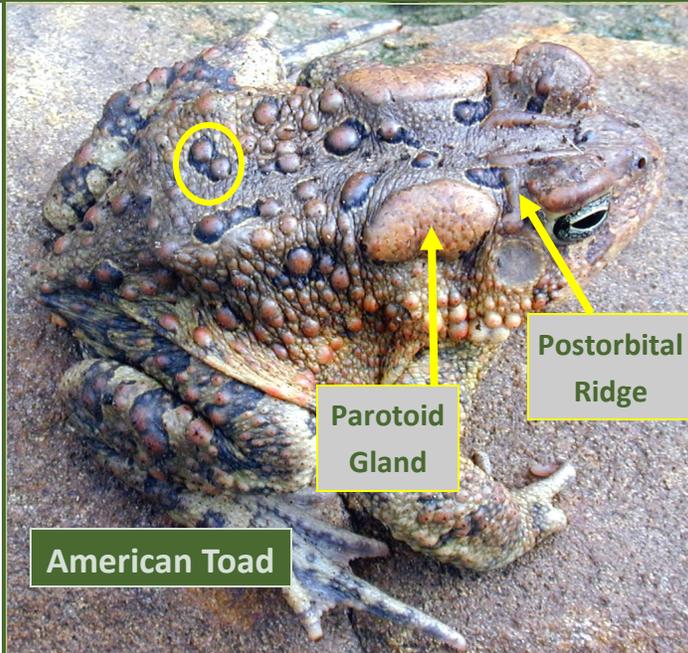
Conservation notes: Frogs and other amphibians are in serious decline and protecting and restoring wetland habitats is vital for their future survival. Another disturbing issue is the continued widespread use of frogs for dissection in science classrooms. The vast majority of frogs used in dissection are collected from natural populations. Dissection simulations are excellent and will accomplish education curriculum objectives in a more ecologically sensitive manner. We have no objection to well

thought out dissection activities, but discourage using large numbers of animals from natural populations. Diseases are also killing frogs and other amphibians and it is important to report frog die-offs. If you find dead or dying frogs around a wetland site, contact Dr. Matt Gray, University of Tennessee, (865) 974-2740 or mattjgray@utk.edu.

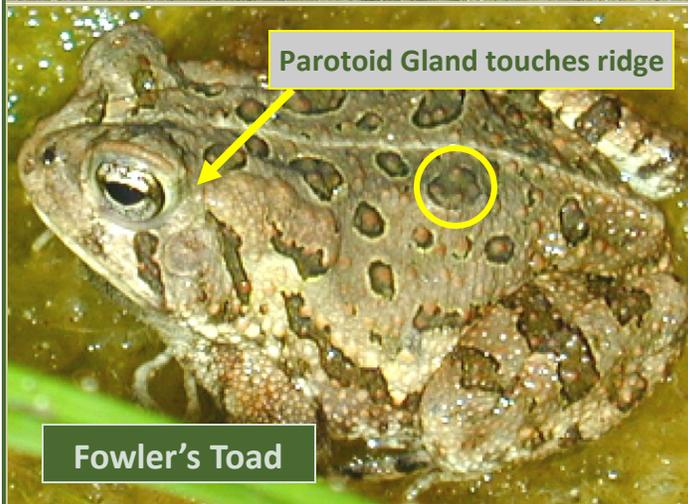


# Toad Family—All Toads Are Frogs, But Not All Frogs are Toads

Toads are by far some of the neatest animals to hop or walk—they do both—around on earth. Two species occur in our area and though their calls are very different, it is challenging to identify them by physical traits. Be sure to carefully read the information on the right in order to distinguish between the two species. American toads in our area are usually calling by late February whereas the harsh *waah* of Fowler’s toads are seldom heard before late March. The males of both species have dark vocal sacs which are rounded when inflated. You know spring is on the way when the American toads start to call. Visit schoolyard wetlands in late February or early March to hear their lovely trill!



The parotoid gland of the American Toad either does not touch the postorbital ridge or is connected to it by a small spur (see arrow above). The parotoid gland of the Fowler’s Toad typically touches the postorbital ridge. Other differences include the number of “warts” in the dark spots and the markings on the chest and belly. Warts usually number 1 to 2 in each dark area on the American Toad while the Fowler’s Toad has 3 or more (see circled areas on each species). American toads are normally spotted with dark markings on the chest and belly. Some Fowler’s toads will have a single dark breast spot but many have no markings on the chest and belly. Identifying toads is a fun way to improve your observation skills.



Most folks know toads do not cause warts, and it is perfectly safe to handle them as long as you wash your hands afterward. The “warts” and parotoids on toads are actually glands which can release a defensive chemical called bufotoxin. Toads have other interesting defensive behaviors ranging from sitting still to slowly walking away when disturbed. If handled they sometimes play dead by rolling onto their backs.

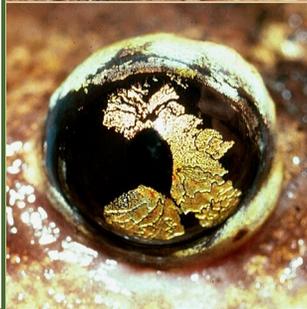


## Two Other Toads That Are Frogs, But Are Not True Toads

Like true toads, the Eastern Spadefoot Toad has warts and parotoid glands, but it actually belongs to a different family of frogs. Spadefoots have noticeably smaller warts than true toads and each hind foot has a single, black spade-like digging device. True toads have two smaller, knoblike projections on each hind foot. Only highly dedicated or lucky frog call listeners will have the privilege of hearing the *wonk*-like calls of the spadefoot. Even though they may be heard from a far distance, spadefoots may not breed every year. It usually takes stormy conditions to trigger breeding and they only call for a few nights at most. Because of their erratic breeding pattern it is difficult to know how common spadefoots are in a given area.



Eastern Spadefoot Toad



Spadefoots have some fascinating characteristics. The beauty of their gold pigmented eyes sharply contrasts with skin secretions which can irritate human eyes and noses, triggering sneezing fits in some people. The authors have never been affected but encourage hand washing if you handle a spadefoot.



Narrowmouth Toad

Narrowmouth toads are in a different family of frogs from the true toads and spadefoots. These are amazing little frogs that show up seemingly far from aquatic breeding sites. The small size, pointy head, and fold of skin between the eyes makes for easy identification. Narrowmouths eat insects and are especially fond of ants. Extending the skin fold down over the eyes may help protect them from ant attacks. This species appears to be fairly common across Anderson County and is readily recognized by the call which sounds like the bleating of lambs.



The two schoolyard wetlands behind Dutch Valley Elementary School have large populations of narrowmouth toads. They are amazingly loud for their size (under two inches long), and their call sounds like the bleating of lambs. Females can produce 1,000 plus eggs which are laid on top of the water in flat clusters containing 10 to 100 eggs in each cluster. A fun family outing is to visit one of the many schoolyard wetlands in Anderson County at night and see what frogs and other wetland life you can discover.



Gray treefrogs are beautifully patterned medium - sized frogs ranging in color from dark to light gray or green. The large toe pads are easy to see and the skin is bumpy. There is a white spot under each eye and the thighs are bright yellow underneath (see below). There are two species of gray treefrogs—the Common Gray Treefrog and Cope’s Gray Treefrog. They cannot be distinguished by their physical features, but to the trained ear they sound very different. We have only documented the raspy trill of the Cope’s Gray Treefrog in our area, where they can be heard calling from April through June. You might see gray treefrogs sitting on windows or glass doors where you can have a close look at their large toe pads.

## Treefrog Family—A Highly Variable Group



Gray Treefrogs



As air temperatures increase in late April and May, gray treefrogs start moving in mass to the edges of wetlands where the males can be observed calling at night in order to attract females. Your local Anderson County schoolyard wetlands are ideal places to explore at night and discover gray treefrogs. During the day the perfect time to walk around wetland edges and look for newly metamorphosed frogs is when school starts in August . Carefully scan the vegetation for tiny emerald green frogs which are about the size of the end of your pinky finger. Consider yourself in the elite observers club if you spot one of these cryptic jewels! In order to protect newly transformed frogs we discourage mowing around wetlands in mid to late summer.



A newly transformed Gray Treefrog can be seen in the photograph to the left. It is great fun to search for these cryptic little frogs around wetland edges. Once you see the first one it will be much easier to find others. Do you see it?



In order to be successful, frogs - like all animals - must find food and not become food for predators. The Pickerel Frog (pg 2) and Gray Treefrog appear to use a combination of camouflage and “warning” coloration. There is still much to learn about how bright colors protect animals, but the general thought is that they serve to warn predators of possible toxins or unpleasant taste. Gray treefrogs for example can be difficult to see, but when they jump, their bright yellow thighs are flashed which possibly startles and/or provides a warning to predators that their skin contains irritating chemicals.

Three species of chorus frogs occur in Anderson County—Upland Chorus Frog, Spring Peeper, and Mountain Chorus Frog. All three species start calling in February, but the Mountain Chorus Frog (not shown) is rare in our area. It has only been found in the northwest part of Anderson County. The Upland Chorus Frog and Spring Peeper are two of our most common species. Not much bigger than a dime, the Upland Chorus Frog usually has three dark stripes down the back which are often broken into short segments. A dark stripe runs through each eye and there is a triangle shaped marking between the eyes. The call sounds like a fingernail being scraped over the teeth of a comb. Chorus frogs commonly call during the day. They are members of the treefrog family, but their toe pads are relatively small.



Upland  
Chorus Frog

Most people have heard the high pitched peeping of spring peepers. Even though there may be dozens of males calling in a small pool, the shrill notes make locating individual callers a real challenge. Spring peepers have obvious toe pads and usually have an X-shaped marking on their back. What prey item is the peeper below swallowing? Hint: notice the long-legs extending from the mouth.



Spring Peepers



You can have a backyard wetland and your kids or grandkids will love you for it. *A Guide to Creating Vernal Ponds* by Tom Biebighauser provides step by step instructions for creating healthy wetlands. This publication is free, just type in the name of the publication and download it as a pdf. The *Center for Wetlands and Stream Restoration* is an excellent resource for information on wetlands. Discovery is the “heart” of the natural sciences. The four walls of a classroom are not the early thinking cornerstones for future E.O. Wilsons. Kids (and adults) need to discover their world on their own terms. Wetlands are an explorer’s paradise!



The Northern Cricket Frog is a member of the treefrog family, but like the chorus frog, it does not seem very treefrog like. Adult cricket frogs are similar in size (~1”) to chorus frogs, but they usually have a more distinctive dark triangle between the eyes than upland chorus frogs. We have not heard cricket frogs in Anderson County since the early 1980s, but we have found them in some adjoining counties. Cricket frogs have an unmistakable call which sounds like two marbles being hit together at different speeds. There are websites listed on the back of this guide where you can see photographs and listen to the calls of all the frogs found in TN.



Northern Cricket Frog

# Resources

Students with the Clinch River Environmental Studies Organization (CRESO) are participating in a sound workshop conducted by the LEAPS Staff. Using technology to create sound libraries is a great way to improve student listening skills. Visit the LEAPS website (<http://leaps.ms/Recording Natural Sounds.htm>) for step by step instructions on how to create your own backyard sound library. A small hand-held voice recorder is an inexpensive and effective technique for kids (and adults) to document nature's "voices."



Sound Workshop

## Frogs Found in Anderson County, TN

### Family Pelobatidae (Spadefoots)

- Eastern Spadefoot (*Scaphiopus holbrookii*)

### Family Bufonidae (True Toads)

- American Toad (*Bufo americanus*)
- Fowler's Toad (*Bufo fowleri*)



### Family Hylidae (Treefrogs)

- Northern Cricket Frog (*Acris crepitans*)
- Cope's Gray Treefrog (*Hyla chrysoscelis*)
- Mountain Chorus Frog (*Pseudacris brachyphona*)
- Spring Peeper (*Pseudacris crucifer*)
- Upland Chorus Frog (*Pseudacris triseriata*)

### Family Microhylidae (Narrow-mouthed Toads)

- Eastern Narrow-mouthed Toad (*Gastrophryne carolinensis*)

### Family Ranidae (True Frogs)

- American Bullfrog (*Rana catesbeiana*)
- Green Frog (*Rana clamitans*)
- Pickerel Frog (*Rana palustris*)
- Southern Leopard Frog (*Rana utricularia*)
- Wood Frog (*Rana sylvatica*)

There are some excellent books on frogs, but limited space allows us to share only two of our favorites.

*Frogs and Toads of the Southeast* by M. Dorcas and W. Gibbons (2008) is a must for all frog fans. *The Frog Book* by M. Dickerson (1969) is enchanting reading. The solid science is complimented by her graceful prose. For example, when she describes the hand capture of a Leopard Frog — "he stops struggling and begins to expostulate in a very decided but musical voice. We watch and listen in astonishment and admiration. Who knew that a frog could talk in so charming a fashion?" We encourage you to visit a wetland and listen to the "charming talking" of frogs.

A great place to ID frog calls



<http://www.tn.gov/twra/tamp/frogs.html>

### Resources for Learning more about Frogs in Tennessee

- TWRA [www.tn.gov/twra/nongame.html](http://www.tn.gov/twra/nongame.html)
- THS [www.tnherpsociety.org](http://www.tnherpsociety.org)
- Frog Haven Farm [www.froghavenfarm.com](http://www.froghavenfarm.com)
- LEAPS [www.leaps.ms](http://www.leaps.ms)
- Atlas of Amphibians in Tennessee [www.apsu.edu/amatlas](http://www.apsu.edu/amatlas)
- CRESO [www.cresosnake.com](http://www.cresosnake.com)

All photos taken by CRESO Students or Staff unless otherwise noted. This CRESO publication supported by the Department of Energy , Grant #DE-FG05-93OR22105CRESO

Scientific and common names follow Crother (2008). Nomenclature above the level of species follows that of Conant and Collins (1998).