




Identification of Tennessee Anurans



Hyla versicolor



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Anuran Families Order Anura

Suborder Mesobatrachia

Suborder Neobatrachia

Bufonidae




2
True Toads

Scaphiopodidae




1
American Spadefoots

Microhylidae



1
Narrow-mouthed Toads

Hylidae



10
Tree Frogs

Ranidae



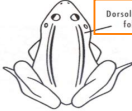
7
True Frogs

Morphological Characteristics


Ranidae, Hylidae

FRIGS

Some species are distinguished by the presence of raised longitudinal folds



Dorsolateral fold



No fold

Bufonidae

TOAD


Cranial crests

Parotoid gland


Warts

Glanular glands

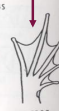
FEET OF TOADS AND FROGS



TOAD



TREEFROG




TRUE FROG

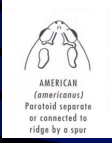
Family
Bufonidae

American toad


(Anaxyrus americanus)



Eggs: 1-2 strings
(4,000-12,000 eggs)
>10 m length



AMERICAN
(americanus)
Parotoid separate
or connected to
ridge by a spot



© Tom Tyming
Mass Audubon

SVL = 3"

Breeding Call

- Long, musical trill (constant)

Breeding Season

- Early (March)


Characteristics:

- Parotoid glands rarely touch cranial crest
- 1-2 granular glands "warts" per dark spot

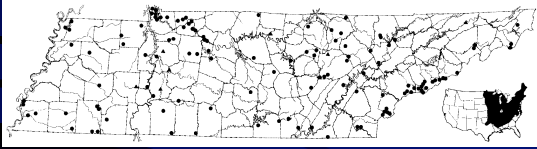
Family
Bufonidae

American toad

(Anaxyrus americanus)




Distribution: EM



<http://www.apsu.edu/amathas/>

- Eastern United States
- Statewide

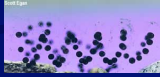


© Will Brown

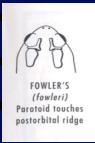
Family
Bufonidae

Fowler's toad


(Anaxyrus fowleri)



Eggs: 1-2 strings
(5,000-10,000 eggs)
<3 m length



FOWLER'S
(fowleri)
Parotoid touches
postorbital ridge



© Tom Tyming
Mass Audubon

SVL = 2.5"

Breeding Call

- Nasal "w-a-a-h"
- Sheep bleating or baby crying

Breeding Season

- Mid (May)


Characteristics:

- Parotoid glands touch cranial crest
- ≥ 3 granular glands "warts" per dark spot

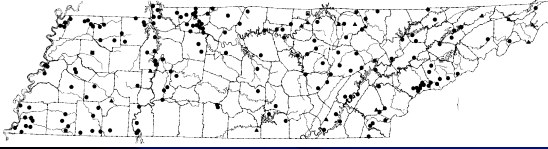
Family
Bufonidae

Fowler's toad

(*Anaxyrus fowleri*)




Distribution: EM



<http://www.apsu.edu/amatlas/>


- Eastern United States
- Statewide




Family
Scaphiopodidae

Eastern spadefoot


(*Scaphiopus holbrookii*)



Metatarsal tubercle



T-storms



© Tom Young, Mass Audubon
SVL = 2"

Breeding Call

- Nasal grunts: "wahh, wahh, wahh"
- Young crow

Breeding Season

- Late (June, July) (heavy rain)

Characteristics:

- Vertical Pupil
- Granular glands but no parotoid glands

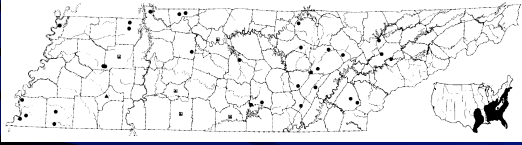
Family
Scaphiopodidae

Eastern spadefoot

(*Scaphiopus holbrookii*)


Xeric Adapted Genera

Distribution: EM-S



<http://www.apsu.edu/amatlas/>


- Southeastern United States
- Statewide (rare Smokies)



Family
Microhylidae

Eastern narrow-mouthed toad

(*Gastrophryne carolinensis*)



Breeding Call

- High pitch buzz "bzzzzz"
- Insect wings



Breeding Season

- Late (June, July)
(heavy rain)

Characteristics:

- Pointed snout, short limbs, plump body
- **Folded skin between eyes**

T-storms

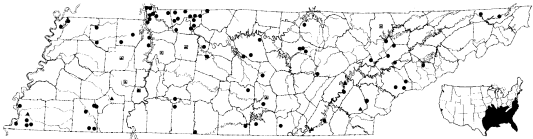
SVL = 1"

Family
Microhylidae

Eastern narrow-mouthed toad


(*Gastrophryne carolinensis*)

Distribution: EM-S



<http://www.apsu.edu/amAtlas/>

- Southeastern United States
- Statewide (rare Smokies)



Family
Hylidae

Northern cricket frog

(*Acris crepitans*)

Acris = locust
crepitans = clattering

Breeding Call

- Metallic clicking (2 metal balls)
- Tempo changes: (slow-fast-slow)

Breeding Season

- Mid (May)

Characteristics:

- Dark triangle between eyes; often bright "Y" racing stripe
- **>1/2 of longest toe on rear feet webbed**

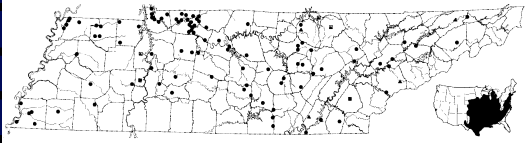


SVL = <1"

Family
Hylidae


Northern cricket frog (*Acris crepitans*)

Distribution: **EM**



<http://www.apsu.edu/amAtlas/>

- Midwest and Eastern U.S.
 - Statewide




Family
Hylidae

Southern cricket frog (*Acris gryllus*)

Acris = locust
gryllus = cricket

Breeding Call

- Metallic clicking (2 metal balls)
- Raspier, shorter
- Tempo constant



Breeding Season

- Late (June, July)

SVL = <1"

Characteristics:

- Dark triangle between eyes; often bright "Y" racing stripe (more distinct line than *A. crepitans*)
- $\leq 1/2$ of longest toe on rear feet webbed

Family
Hylidae

Southern cricket frog (*Acris gryllus*)

Distribution: **EM/F**



<http://www.apsu.edu/amAtlas/>

- Deep Southern U.S.
 - Southwest TN



Family
Hylidae

Bird-voiced treefrog

(Hyla avivoca)

Breeding Call

- Bird-like Chirping
- Whistling for dog

Breeding Season

- Mid (May, June)

Characteristics:

- Light green or gray with light-colored patch under eye
- **No flash colors like gray treefrogs**

Coloration can be highly variable!

Family
Hylidae

Bird-voiced treefrog

(Hyla avivoca)

Distribution: **F**

<http://www.apsu.edu/amAtlas/>

- Primarily MAV
- **Western TN**

Family
Hylidae

Green treefrog

(Hyla cinerea)

Breeding Call

- Short nasal repeating "quonk"
- Bicycle horn

Breeding Season

- Late (June, July)

Characteristics:

- Always green, smooth back and belly
- **White-yellow stripe extending from upper lip mid-laterally**

Family
Hylidae

Green treefrog

(Hyla cinerea)

**Good climbers,
Nocturnal**

Distribution: F, EM



<http://www.apsu.edu/amAtlas/>

- Southeastern United States
- Western TN but expanding into East TN



Family
Hylidae

Cope's Gray treefrog

(Hyla chrysoscelis)



Breeding Call

- Short raspy trill (constant)
- Faster than *H. versicolor*
- 34-69 pulses/sec



Characteristics:

- Gray to greenish with mottled back
- Yellow-orange flash colors under legs

Breeding Season

- Mid (May, June)

• 1/2 chromosomes of *H. versicolor*

SVL = 2"

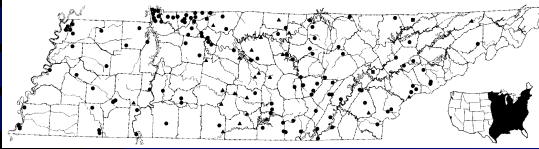


Family
Hylidae

Cope's Gray treefrog


(Hyla chrysoscelis)

Distribution: EM, F




<http://www.apsu.edu/amAtlas/>

- Eastern United States
- Statewide




Family
Hylidae

Barking treefrog
(*Hyla gratiosa*)



Breeding Call

- Steady raspy honk
- Sounds similar to a beagle bark or Canada goose
- Higher pitch than green frog



Breeding Season

- Late (June, July)

Characteristics:

- Solid green (granulated) or green with dark spots
- **White upper lip does not extend mid-laterally**

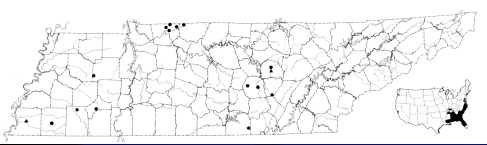
SVL = 2-3"

Largest of the treefrogs in Tennessee

Family
Hylidae

Barking treefrog
(*Hyla gratiosa*)


Distribution: **F**



<http://www.apsu.edu/amAtlas/>

Species of Concern
(G5, S3)

- Deep Southern U.S.
- West TN & Cumberland Plateau



Family
Hylidae

Spring Peeper
(*Pseudacris crucifer*)



Breeding Call

- Clear Distinct Peep

"Cross bearer"



Breeding Season

- Early (Feb, March)

Characteristics:

- Light-brown, smooth skin with dark line between eyes
- **Dark cross on back**

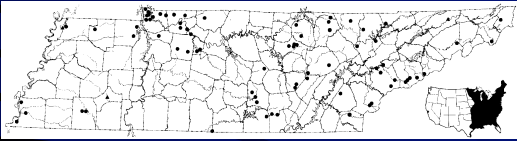
SVL = 1"

Family
Hylidae

Spring Peeper


(Pseudacris crucifer)

Distribution: F/EM



<http://www.apsu.edu/amAtlas/>

- Eastern United States
- Statewide



Family
Hylidae

Mountain Chorus Frog

(Pseudacris brachyphona)

Breeding Call

- Short, raspy call that rises in pitch
- Running finger over comb but duller than *P. feriarum*

Breeding Season

- Early (April)

Characteristics:

- Light-brown, smooth skin with dark line through eye
- Backward parentheses on back (sometimes)



SVL = 1"

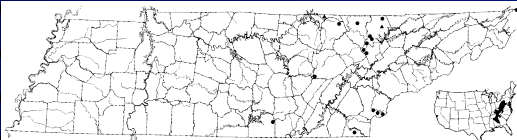
1/3 size of a wood frog

Family
Hylidae

Mountain Chorus Frog


(Pseudacris brachyphona)

Distribution: F/EM-S Forested wetlands >1000 m elevation



<http://www.apsu.edu/amAtlas/>

- Southern Appalachia
- Mostly Cumberland Mountains and Plateau



Southeastern (upland) Chorus Frog
(*Pseudacris feriarum*)

Family: **Hylidae**

Breeding Call
• Running finger over comb but more metallic than *P. brachyphona*

Breeding Season
• Early (January)


Characteristics:

- Light to dark brown with **dark triangle** between eyes
- **Three dark dorsal lines (usually)**

Earliest breeding frog

Note: call rises (gray treefrogs do not)

SVL = 1"



Southeastern Chorus Frog
(*Pseudacris feriarum*)

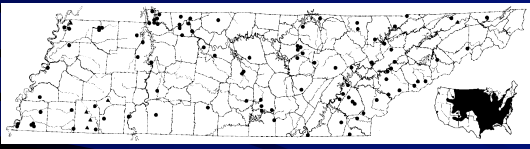
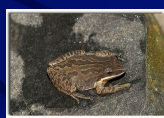
Family: **Hylidae**

Distribution: **EM** Prefer emergent wetlands

Southeastern United States

- **Statewide**

<http://www.apsu.edu/amAtlas/>

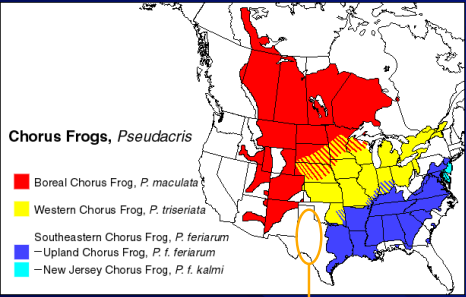



Chorus Frog Distributions

Chorus Frogs, *Pseudacris*

- Boreal Chorus Frog, *P. maculata*
- Western Chorus Frog, *P. triseriata*
- Southeastern Chorus Frog, *P. feriarum*
- Upland Chorus Frog, *P. f. feriarum*
- New Jersey Chorus Frog, *P. f. kalmi*

Spotted Chorus Frog (*P. clarkii*)



Family
Ranidae

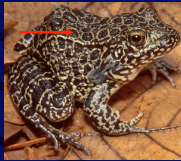
Crawfish Frog

(Lithobates areolatus)

Lives in crawfish and small mammal burrows.

Breeding Call

- Deep "Waaaaa"
- Sounds like someone snoring



SVL = 2.5"

Breeding Season

- Early (March)

Species of Concern (G4, S4)

Characteristics:

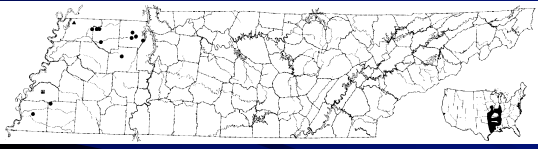
- Dark spots encircled in white, white throat
- **Dorsal lateral folds very apparent**

Family
Ranidae

Crawfish Frog


(Lithobates areolatus)

Distribution: EM



<http://www.apsu.edu/amAtlas/>

- Mississippi Alluvial Valley
- **West Tennessee**



Family
Ranidae


American bullfrog

(Lithobates catesbeianus)

Largest frog in Tennessee

Breeding Call

- loud deep "jug-o-rum"
- Often play dead when handled



SVL = 5"

Breeding Season

- Late (June, July)

Characteristics:

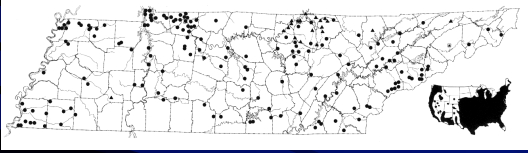
- Green or brown with dorsal lateral folds around tympanum
- **Males: Tympanum larger than eye**

Family
Ranidae

American bullfrog


(Lithobates catesbeianus)

Distribution: EM



<http://www.apsu.edu/amAtlas/>

- Eastern U.S.
(introduced western states)
- **Statewide**



Family
Ranidae

Green frog

(Lithobates clamitans)

Breeding Call

- Short, explosive "glunk"
- Banjo string being plucked
- Lower pitch than barking treefrog



SVL = 3"

Breeding Season

- Late (June, July)



Characteristics:

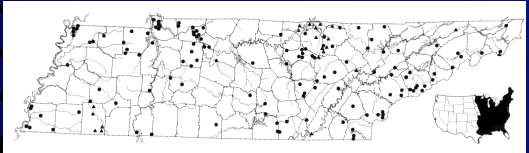
- Green or brown with dorsal lateral folds extending past tympanum, center of tympanum raised
- **Males: Tympanum larger than eye**

Family
Ranidae

Green frog


(Lithobates clamitans)

Distribution: EM



<http://www.apsu.edu/amAtlas/>


- Eastern United States
- **Statewide**



Family
Ranidae

Pickerel frog

(Lithobates palustris)



Breeding Call

- Drawn-out, descending snore, "yeeeeeeooooow"
- Not as deep as *L. areolatus*

SVL = 2.5"

Breeding Season

- Early (April)

Characteristics:

- Tan with dark paired dorsal spots (square)
 - **No white spot on tympanum**

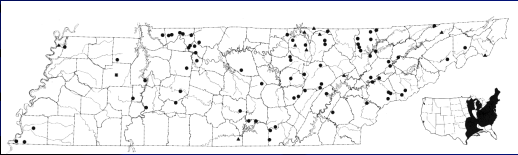
• Sounds like opening a creaky door

Family
Ranidae

Pickerel frog


(Lithobates palustris)

Distribution: EM



<http://www.apsu.edu/amAtlas/>

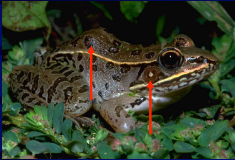
- Eastern United States (excluding Gulf Coast)
 - **Statewide** (less common in west TN)



Family
Ranidae

Southern leopard frog

(Lithobates sphenoccephalus)



Breeding Call

- Series of clucks or chuckles
- Also, groans similar to rubbing hand over a balloon

SVL = 2.5"

Breeding Season

- Early (Feb, March)

Characteristics:

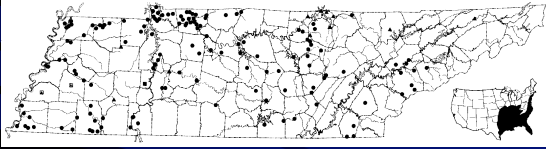
- Tan with dark dorsal spots in irregular pattern
 - **White spot on tympanum**

Family
Ranidae

Southern leopard frog

(Lithobates sphenocephalus)

Distribution: EM



<http://www.apsu.edu/amAtlas/>

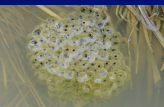
- Southeastern U.S.
 - **Statewide**
 - (not common in Smokies)



Family
Ranidae

Wood frog


(Lithobates sylvaticus)



Bi-colored Embryos
Black (above), white (below)

Breeding Call

- Series of clucks or chuckles (mallard)
- Interspersed with low grunts



SVL = 2"

Breeding Season

- Early (February)

Characteristics:

- Tan dark mask below and behind eye
- **White upper lip**

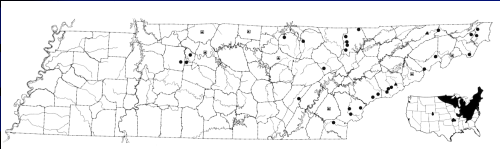
Forested wetlands often before ice is gone

Family
Ranidae

Wood frog


(Lithobates sylvaticus)

Distribution: F



<http://www.apsu.edu/amAtlas/>

- Northeastern U.S.
- **Middle & East TN**



Seasonal Occurrence Tennessee Anurans

January: southeastern chorus frog

February: wood frog, spring peeper, gopher frog

March: American toad, southern leopard frog, crawfish frog

April: pickerel frog, mountain chorus frog

May: Fowler's toad, northern cricket frog, gray treefrogs,
bird-voiced treefrog

June/July: green frog, American bullfrog, southern cricket frog,
eastern narrow-mouthed toad, eastern spadefoot,
barking treefrog, green treefrog

August-Dec: possible to hear most species especially after rains
and on warm days in fall and winter, although breeding for
temperate anurans is concentrated January-July.

Citations and Helpful Websites

Identification Texts

- Niemiller, M., and R. G. Reynolds. 2011. The amphibians of Tennessee. University of Tennessee Press, Knoxville, TN.
- Dodd, C. K. Jr. 2004. The amphibians of Great Smoky Mountains National Park. The University of Tennessee Press, Knoxville, TN, USA.
- Conant, R., J. T. Collins. 1998. Peterson field guides: reptiles and amphibians: Eastern/Central North America. 3rd edition. Houghton Mifflin Company, New York, NY, USA.

Pictures and Calls

- LEAPS-Environmental Consulting
<http://www.leaps.ms/>
- Tennessee Wildlife Resources Agency (Frogs and Toads of TN)
<http://www.tn.gov/twra/tamp/frogs.shtml>
- Frog and Toads of North Carolina
http://www.bio.davidson.edu/projects/herpcons/herps_of_NC/anurans/anurans.html





















Breeding Calls

1) Call: 

2) Call: 

3) Call: 

4) Call: 

5) Call: 

6) Call: 

7) Call: 

8) Call: 

9) Call: 

10) Call: 
