Identification of Tennessee Anurans

Hyla versicolor

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Anuran Families

Order Anura

Suborder Mesobatrachia

Suborder Neobatrachia

Bufonidae

True Toads

Scaphiopodidae

American Spadefoots

Microhylidae

Narrow-mouthed Toads

Hylidae

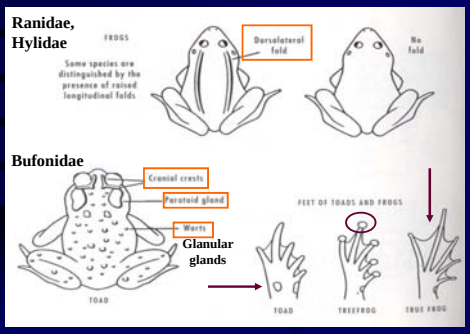
Tree Frogs

Ranidae

True Frogs

Morphological Characteristics

Ranidae, Hylidae



Family Bufonidae

American toad
(*Anaxyrus americanus*)

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

Breeding Call
- Long, musical trill (constant)

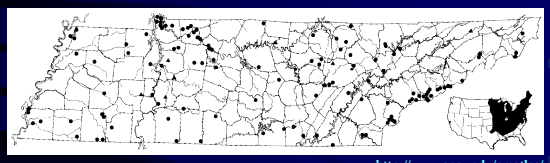
Breeding Season
- Early (March)

Characteristics:
SVL = 3”
- Parotoid glands rarely touch cranial crest
- 1-2 glanular glands “warts” per dark spot

Family Bufonidae

American toad
(*Anaxyrus americanus*)

Distribution: EM



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

- Eastern United States
- Statewide

Family Bufonidae

Fowler’s toad
(*Anaxyrus fowleri*)

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

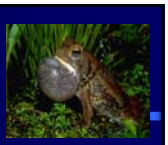
Breeding Call
- Nasal "w-a-a-h"
- Sheep bleating or baby crying

Breeding Season
- Mid (May)

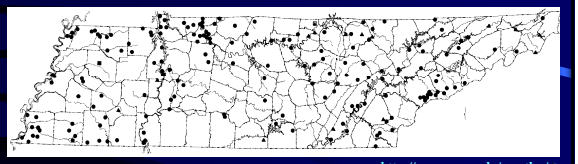
Characteristics:
SVL = 2.5”
- Parotoid glands touch cranial crest
- ≥3 glanular glands “warts” per dark spot

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 Tyning-Mass Audubon

SVL = 2"

Breeding Call

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

Breeding Season

- Late (June,July) (heavy rain)

Characteristics:

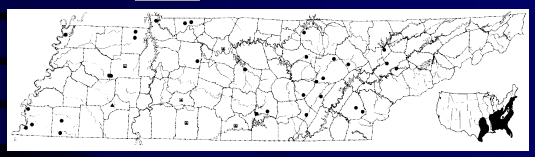
- Vertical Pupil
- Glanular glands but no parotoid glands

Family
Scaphiopodidae

Eastern spadefoot
(*Scaphiopus holbrookii*)

Xeric Adapted Genera

Distribution: EM-S



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- Southeastern United States
  - Statewide (rare Smokies)

Family
Microhylidae

Eastern narrow-mouthed toad
(*Gastrophryne carolinensis*)

T-storms

SVL = 1”

Breeding Call

- High pitch buzz “bzzzzzz”
- Insect wings

Breeding Season

- Late (June, July) (heavy rain)

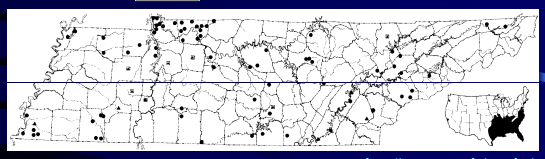
Characteristics:

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

Family
Microhylidae

Eastern narrow-mouthed toad
(*Gastrophryne carolinensis*)

Distribution: EM-S



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

- Southeastern United States
- **Statewide (rare Smokies)**

Specialize in eating ants!

Family
Hylidae

Northern cricket frog
(*Acris crepitans*)

Acris = locust
crepitans = clattering

Breeding Call

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

SVL = <1”

Breeding Season

- Mid (May)

Characteristics:

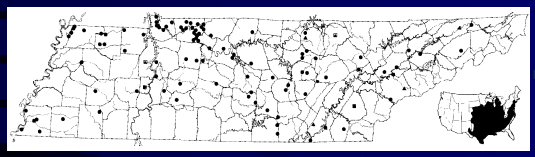
- Dark triangle between eyes; often bright **“Y”** racing stripe
- **>1/2 of longest toe on rear feet webbed**

Family
Hylidae

Northern cricket frog
(*Acris crepitans*)

Emergent wetlands with direct sun

Distribution: EM



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- 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

SVL = <1"

Breeding Season

- Late (June, July)

Characteristics:

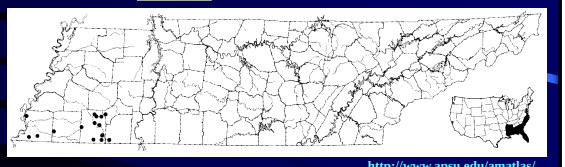
- Dark triangle between eyes; often bright "Y" racing stripe (more distinct line than *A. crepitans*)
  - <1/2 of longest toe on rear feet webbed

Family
Hylidae

Southern cricket frog
(*Acris gryllus*)

Highly dexterous

Distribution: EM/F



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- Deep Southern U.S.
  - Southwest TN

Family
Hylidae

Bird-voiced treefrog
(*Hyla avivoca*)

Highly arboreal: forested wetlands and streams

Breeding Call

- Bird-like Chirping
- Whistling for dog

SVL = 1.5"

Breeding Season

- Mid (May, June)

Characteristics:

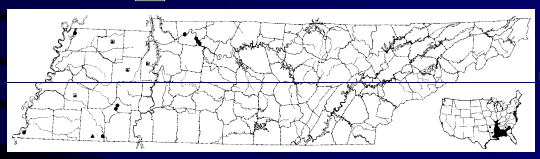
Coloration can be highly variable!

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

Family
Hylidae

Bird-voiced treefrog
(*Hyla avivoca*)

Distribution: F



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- Primarily MAV
- **Western TN**

Family
Hylidae

Green treefrog
(*Hyla cinerea*)

Breeding Call

- Short nasal repeating "quonk"
- Bicycle horn

SVL = 2"

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

Family
Hylidae

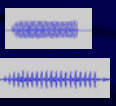
Cope's Gray treefrog
(*Hyla chrysoscelis*)

•½ chromosomes of *H. versicolor*

Breeding Call

- Short raspy trill (constant)
- Faster than *H. versicolor*

34-69 pulses/sec



SVL = 2"

Breeding Season

- Mid (May, June)

Highly arboreal: forested wetlands

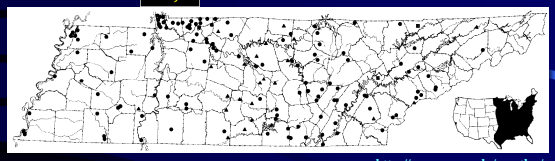
Characteristics:

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

Family
Hylidae

Cope's Gray treefrog
(*Hyla chrysoscelis*)

Distribution: EM, F



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- Eastern United States
  - Statewide

Family
Hylidae

Gray treefrog
(*Hyla versicolor*)

Breeding Call

- Short raspy trill
- Slower than *H. chrysoscelis*
  17-35 pulses/sec
- 2X chromosomes of *H. chrysoscelis*

SVL = 2”

Breeding Season

- Mid (May, June)

Distribution

- West Tennessee

Species of Concern (G5, S5)

Characteristics:

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

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

SVL = 2-3”

Breeding Season

- Late (June, July)

Largest of the treefrogs in Tennessee

Characteristics:

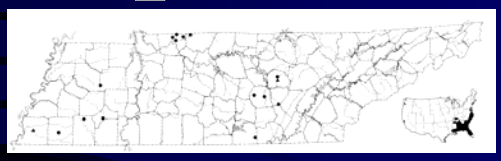
- Solid green (granulated) or green with dark spots
- **White upper lip does <u>not</u> extend mid-laterally**

Family
Hylidae

Barking treefrog
(*Hyla gratiosa*)

Species of Concern (G5, S3)

Distribution: F



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

Family
Hylidae

Spring Peeper
(*Pseudacris crucifer*)

Breeding Call

•Clear Distinct Peep

"Cross bearer"

SVL = 1"

Breeding Season

•Early
(Feb, March)

Prefers woodland pools

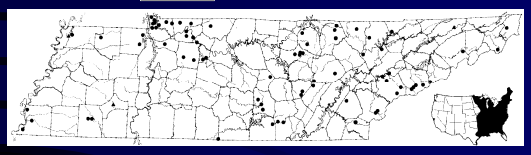
Characteristics:

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

Family
Hylidae

Spring Peeper
(*Pseudacris crucifer*)

Distribution: F/EM



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

- Eastern United States
- **Statewide**

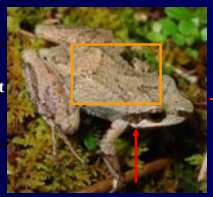
Family
Hylidae

Mountain Chorus Frog
(*Pseudacris brachyphona*)

Breeding Call

•Short, raspy call that rises in pitch

•Running finger over comb but duller than *P. feriarum*



SVL = 1"

Breeding Season

•Early (April)

1/3 size of a wood frog

Characteristics:

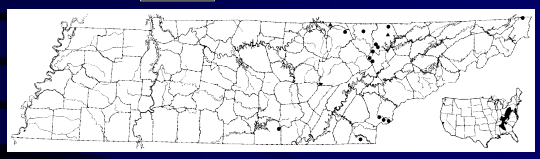
- Light-brown, smooth skin with dark line through eye
- **Backward parentheses on back (sometimes)**

Family Hylidae

Mountain Chorus Frog
(*Pseudacris brachyphona*)

Distribution: F/EM-S

Forested wetlands >1000 m elevation



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- Southern Appalachia
- Mostly Cumberland Mountains and Plateau

Family Hylidae

Southeastern Chorus Frog
(*Pseudacris feriarum*)

Breeding Call

- Running finger over comb but more metallic than *P. brachyphona*

SVL = 1"

Earliest breeding frog

Note: call rises (gray treefrogs do not)

Breeding Season

- Early (January)

Characteristics:

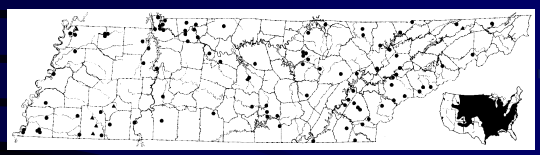
- Light to dark brown with dark triangle between eyes
- Three dark dorsal lines (usually)

Family Hylidae

Southeastern Chorus Frog
(*Pseudacris feriarum*)

Distribution: EM

Prefer emergent wetlands



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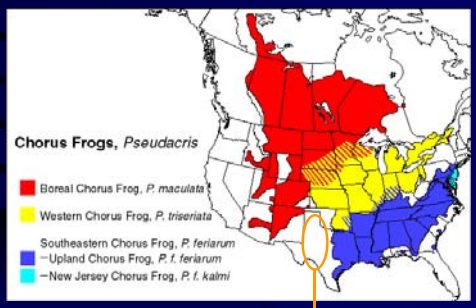
- Southeastern United States
- Statewide

Chorus Frog Distributions



Spotted Chorus Frog (P. clarkii)

Crawfish Frog
(*Lithobates areolatus*)

Family Ranidae

Lives in crawfish and small mammal burrows.

SVL = 2.5"

Breeding Call

- Deep "Waaaaa"
- Sounds like someone snoring

Breeding Season

- Early (March)

Species of Concern (G4, S4)

Characteristics:

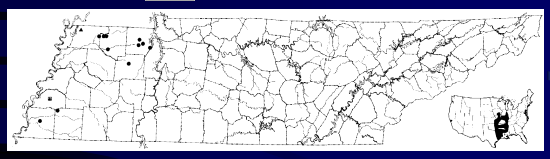
- Dark spots encircled in white, white throat
- **Dorsal lateral folds very apparent**

Crawfish Frog
(*Lithobates areolatus*)

Family Ranidae

Known to eat crawfish and small amphibians.

Distribution: EM



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- Mississippi Alluvial Valley
- **West Tennessee**

Family
Ranidae

Gopher Frog
(*Lithobates capito*)

Breeding Call

- Deep drawn-out snore or growl
- Sounds like a woodpecker pecking

SVL = 3”

- Sometimes calls from beneath water

Breeding Season

- Early (Feb)

Species of Concern (G3, S1)

Characteristics:

- Dark spots NOT encircled in white, spotted throat
- Dorsal lateral folds & sacral humps apparent

Family
Ranidae

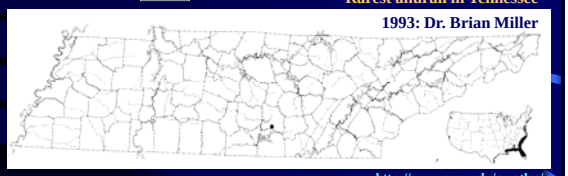
Gopher Frog
(*Lithobates capito*)

Life History in Tennessee is Unknown

Distribution: EM

Rarest anuran in Tennessee

1993: Dr. Brian Miller



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- Gulf Coastal Plain
- Coffee County (Tullahoma)

Family
Ranidae

American bullfrog
(*Lithobates catesbeianus*)

Breeding Call

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

SVL = 5”

Largest frog in Tennessee

Eat anything can fit in mouth

Breeding Season

- Late (June, July)

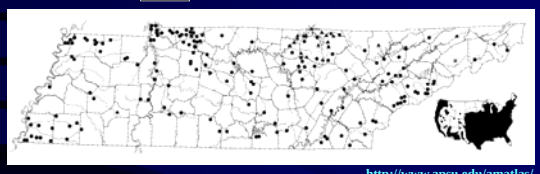
Characteristics:

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

Family
Ranidae

American bullfrog
(*Lithobates catesbeianus*)

Distribution: EM



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- 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)

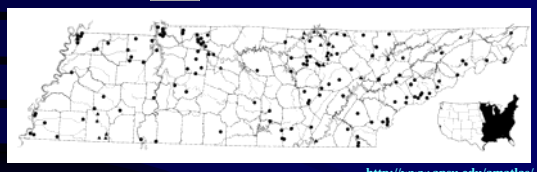
Characteristics:

- 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



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- Eastern United States
- Statewide

Family
Ranidae

Pickerel frog
(*Lithobates palustris*)

•Sounds like opening a creaky door

Breeding Call

•Drawn-out, descending snore, "yeeeeeoooow"

•Not as deep as *R. areolata* and *capito*

SVL = 2.5"

Breeding Season

•Early (April)

Characteristics:

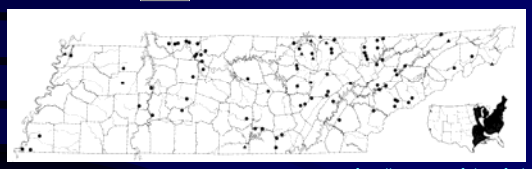
- Tan with dark paired dorsal spots (square)
- **No white spot on tympanum**

Family
Ranidae

Pickerel frog
(*Lithobates palustris*)

Prefer cool water with high water quality

Distribution: EM



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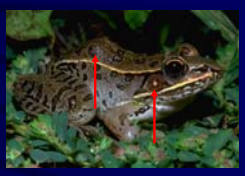
- Eastern United States
  (excluding Gulf Coast)
- **Statewide**
  (less common in west TN)

Family
Ranidae

Southern leopard frog
(*Lithobates sphenocephalus*)



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:

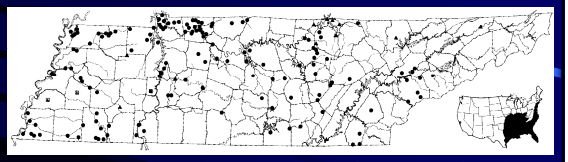
- Tan with dark dorsal spots in irregular pattern
- **White spot on tympanum**

Family Ranidae

Southern leopard frog
(*Lithobates sphenocephalus*)

Distribution: EM

Escapes predators by swimming underwater



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”

Forested wetlands often before ice is gone

Breeding Season

- Early (February)

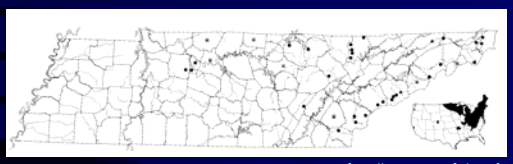
Characteristics:

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

Family Ranidae

Wood frog
(*Lithobates sylvaticus*)

Distribution: F



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- 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

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Breeding Calls

1) Call:
2) Call:
3) Call:
4) Call:
5) Call:
6) Call:
7) Call:
8) Call:
9) Call:
10) Call: