Identification of Tennessee Anurans

Hyla versicolor

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Anuran Families
Order Anura

Suborder Mesobatrachia

Suborder Neobatrachia

Bufonidae

True Toads

Scaphiopodidae

American Spadefoots
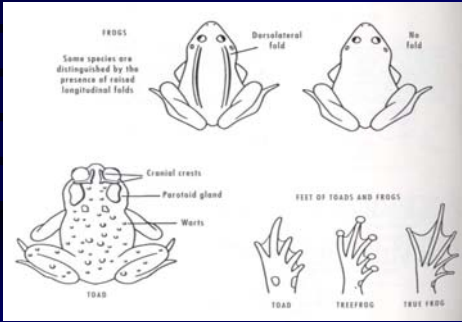
Microhylidae

Narrow-mouthed Toads

Hylidae

Tree Frogs

Ranidae

True Frogs

Morphological Characteristics

Family Bufonidae

American toad
(*Bufo americanus*)

©Tom Tyning Mass Audubon

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

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

Breeding Call
•Long, musical trill (constant)

Breeding Season
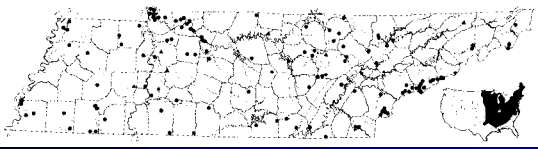•Early (March)

SVL = 3"

Characteristics:
- Parotoid glands rarely touch cranial crest
- 1-2 glanular glands "warts" per dark spot

Family Bufonidae

American toad
(*Bufo americanus*)

Distribution:

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

©Will Brown

- Eastern United States
  - Statewide

Family Bufonidae

Fowler's toad
(*Bufo fowleri*)

©Tom Tyning Mass Audubon

FOWLER'S (*fowleri*) Parotoid touches postorbital ridge

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)

SVL = 2.5"

Characteristics:
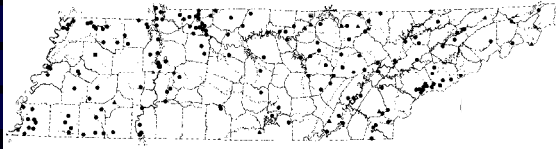- Parotoid glands touch cranial crest
- >3 glanular glands "warts" per dark spot

Family Bufonidae

Fowler's toad
(*Bufo fowleri*)

Distribution:

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:
  "wank, wank, wank"
- 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:

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

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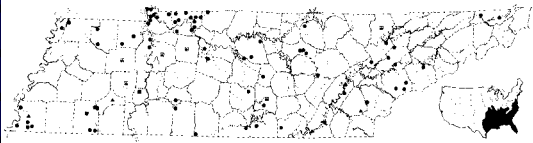
Characteristics:
- Pointed snout, short limbs, plump body
  - Folded skin between eyes

Family

Microhylidae

Eastern narrow-mouthed toad
(*Gastrophryne carolinensis*)

Distribution:

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

Northern cricket frog (*Acris crepitans*)

Family Hylidae

Emergent wetlands with direct sun

Distribution:

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

- Midwest and Eastern U.S.
  - Statewide

Southern cricket frog (*Acris gryllus*)

Family Hylidae
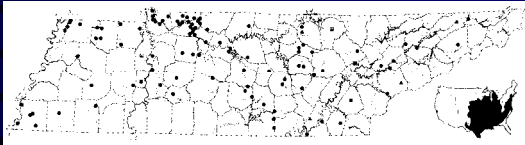
Acris = locust
gryllus = cricket

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

SVL = <1"

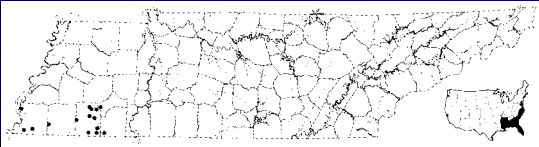**Breeding Season**
- Late (June, July)

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

Southern cricket frog (*Acris gryllus*)

Family Hylidae

Highly dexterous

Distribution:

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

- 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

Breeding Season

•Mid (May, June)

SVL = 1.5"

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:

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)

SVL = 2"

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:

- Southeastern United States
  - Western TN

Family Hylidae

Cope's Gray treefrog
(*Hyla chrysoscelis*)

Breeding Call
- Short raspy trill
- Faster than *H. versicolor* 34-69 pulses/sec
- ½ chromosomes of *H. versicolor*

Breeding Season
- Mid (May, June)

Highly arboreal: forested wetlands

SVL = 2"
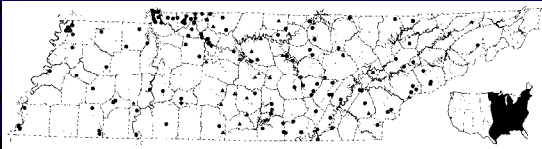
Characteristics:
- Gray to greenish with mottled back
- Yellow-orange flash colors under legs

Family Hylidae

Cope's Gray treefrog
(*Hyla chrysoscelis*)

Distribution:

- Eastern United States
  - Statewide

Gray treefrog
(*Hyla versicolor*)

Family

Hylidae

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

Breeding Season
- Mid (May, June)

Distribution
- West Tennessee

SVL = 2"

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

Species of Concern (G5, S5)

Barking treefrog
(*Hyla gratiosa*)

Family

Hylidae

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

Breeding Season
- Late (June, July)

Largest of the treefrogs in Tennessee

SVL = 2-3"

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

Barking treefrog
(*Hyla gratiosa*)
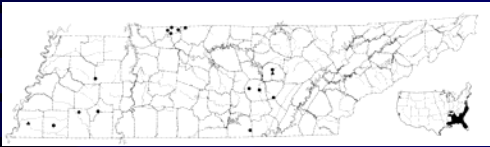
Family

Hylidae

Species of Concern (G5, S3)

Distribution:

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

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

Males often call from water

Family
Hylidae

Spring Peeper
(*Pseudacris crucifer*)

Breeding Call

•Clear Distinct Peep

"Cross bearer"

Breeding Season

•Early
(Feb, March)

**Prefers
woodland pools**

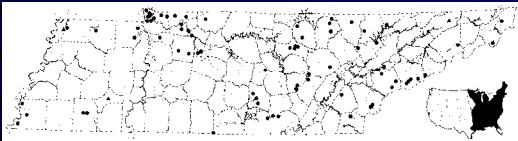SVL = 1"

Characteristics:

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

Family
Hylidae

Spring Peeper
(*Pseudacris crucifer*)

Distribution:

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)

**1/3 size of a
wood frog**

SVL = 1"

Characteristics:

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

Mountain Chorus Frog
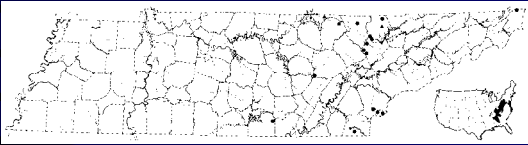### (*Pseudacris brachyphona*)

Family Hylidae

Distribution:

Forested wetlands >1000 m elevation

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

- Southern Appalachia
  - **Mostly Cumberland Mountains and Plateau**

Southeastern Chorus Frog
(*Pseudacris feriarum*)

Family Hylidae

Breeding Call

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

SVL = 1"

Earliest breeding frog

Breeding Season
- Early (January)

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

Southeastern Chorus Frog
(*Pseudacris feriarum*)

Family Hylidae

Distribution:

Prefer emergent wetlands

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

- Southeastern United States
  - **Statewide**

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Chorus Frog Distributions

Chorus Frogs, *Pseudacris*

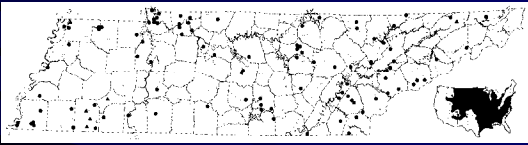- Boreal Chorus Frog, *P. maculata*
- Western Chorus Frog, *P. triseriata*
- Southeastern Chorus Frog, *P. feriarum*
  - Upland Chorus Frog, *P. f. feriarum*
  - New Jersey Chorus Frog, *P. f. kalmi*
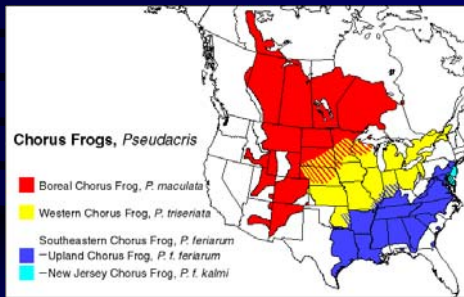
Crawfish Frog
(*Rana areolata*)

Family
Ranidae

Lives in crawfish and small mammal burrows.

Breeding Call

- Deep "Waaaaa"
- Sounds like someone snoring

Breeding Season

- Early (March)

SVL = 2.5"

Species of Concern (G4, S4)

Characteristics:

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

Crawfish Frog
(*Rana areolata*)

Family
Ranidae

Known to eat crawfish and small amphibians.

Distribution:

http://www.apsu.edu/amatlas/
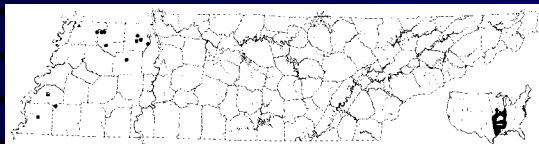
- Mississippi Alluvial Valley
  - West Tennessee

Gopher Frog
(*Rana capito*)

Family
Ranidae

Breeding Call

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

•Sometimes calls from beneath water

Breeding Season

•Early (Feb)

SVL = 3"

Species of Concern (G3, S1)

Characteristics:

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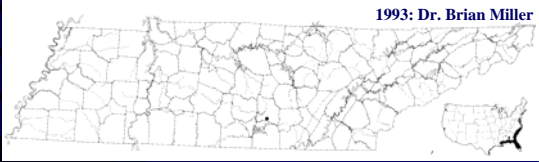• **Dorsal lateral folds & sacral humps apparent**

Gopher Frog
(*Rana capito*)

Family
Ranidae

Life History in Tennessee is Unknown

Distribution:

Rarest anuran in Tennessee
1993: Dr. Brian Miller

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

• **Gulf Coastal Plain**
• **Coffee County (Tullahoma)**

American bullfrog
(*Rana catesbeiana*)

Family
Ranidae

Breeding Call

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

Largest frog in Tennessee

Eat anything can fit in mouth

SVL = 5"

Breeding Season

•Late (June, July)

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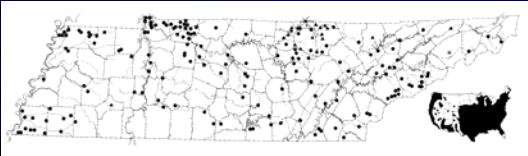
• Green or brown with dorsal lateral folds around tympanum
• **Males: Tympanum larger than eye**

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American bullfrog
(*Rana catesbeiana*)

Family
Ranidae

Distribution:

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

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

Green frog
(*Rana clamitans*)

Family
Ranidae

Breeding Call

- Short, explosive "glunk"
- Banjo string being plucked

SVL = 3"

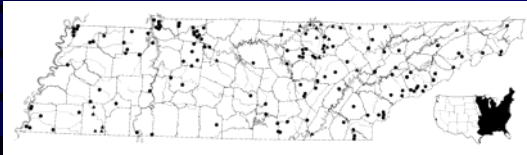**Breeding Season**
- Late (June, July)

Characteristics:

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

Green frog
(*Rana clamitans*)

Family
Ranidae

Distribution:

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

- Eastern United States
  - **Statewide**

Family

Ranidae

Pickerel frog
(*Rana palustris*)

Breeding Call

•Drawn-out, descending snore, "yeeeeeooooow"

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

•Sounds like opening a creaky door

SVL = 2.5"
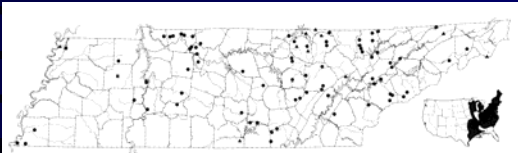
Characteristics:

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

Breeding Season
•Early (April)

Family

Ranidae

Pickerel frog
(*Rana palustris*)

Prefer cool water with high water quality

Distribution:

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

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

Family

Ranidae

Southern leopard frog
(*Rana sphenocephla*)

Breeding Call

•Series of clucks or chuckles

•Also, groans similar to rubbing hand over a balloon

SVL = 2.5"

Characteristics:

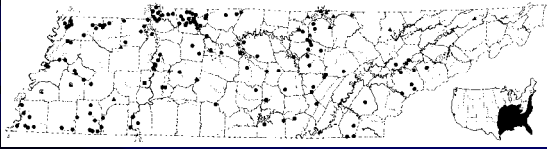- Tan with dark dorsal spots in irregular pattern
  - **White spot on tympanum**

Breeding Season
•Early (Feb, March)

Southern leopard frog
(*Rana sphenocephla*)

Family
Ranidae

Distribution:

Escapes predators by swimming underwater

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

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

Wood frog
(*Rana sylvatica*)

Family
Ranidae

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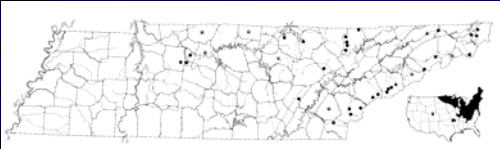
- Tan dark mask below and behind eye
  - **White upper lip**

Wood frog
(*Rana sylvatica*)

Family
Ranidae

Distribution:

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
- 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.
- Dodd, C. K. Jr. 2004. The amphibians of Great Smoky Mountains
National Park. The University of Tennessee Press, Knoxville,
TN, USA.

Pictures
- USGS- Checklist of amphibian species and identification guide
http://www.npwrc.usgs.gov/narcam/idguide/

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

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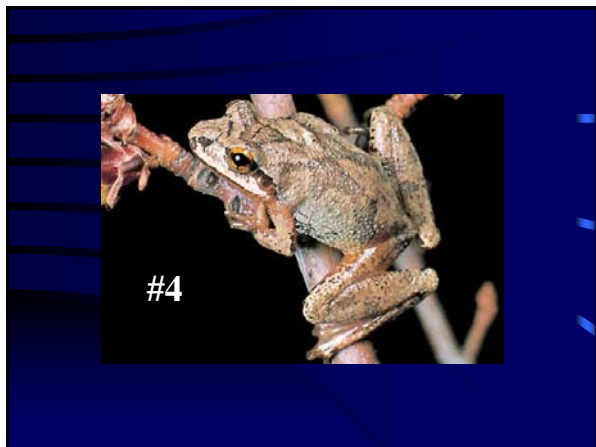
Breeding Calls

1) Call:
2) Call:
3) Call:
4) Call:
5) Call:

6) Call:
7) Call:
8) Call:
9) Call:
10) Call: