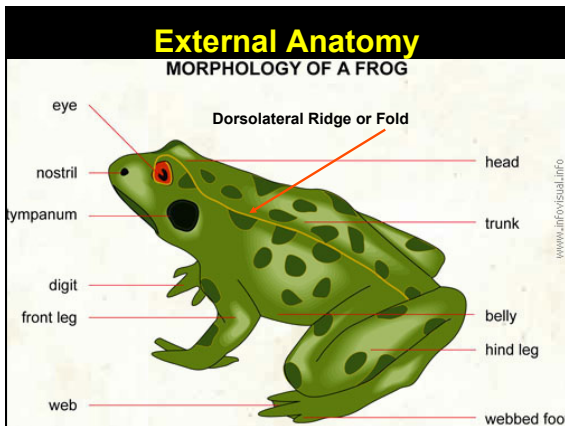


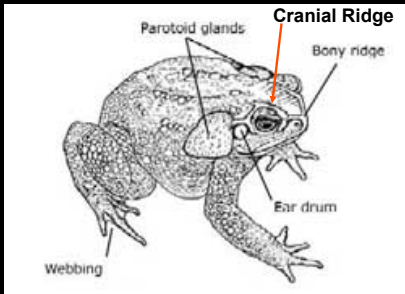
Frogs and Toads

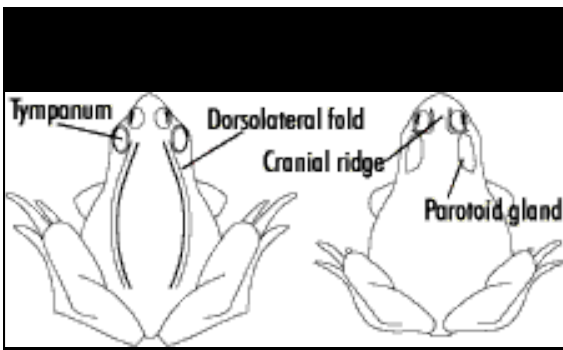
- WFS 340
 - The following slides do not include all 21 species covered during the TAMP workshop
 - Graves modified an old slide presentation from a former course in an attempt to provide another study resource to enhance student learning
 - Any page numbers referenced in this slideshow are from Peterson's field guide

- The following anatomy slides should help you w/ ID.
- The major anatomical features that were mentioned during the TAMP workshop include:
 - Eye, Pupil, Tympanum, Webbing, Dorsolateral Ridge/Fold, Paratoid Gland, Cranial Crest/Ridge, and Flash Colors on Underside of Legs

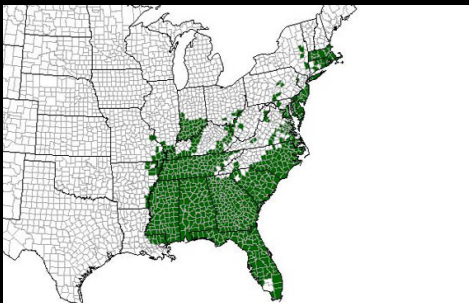


Toads: Paratoid Glands typical of this Family

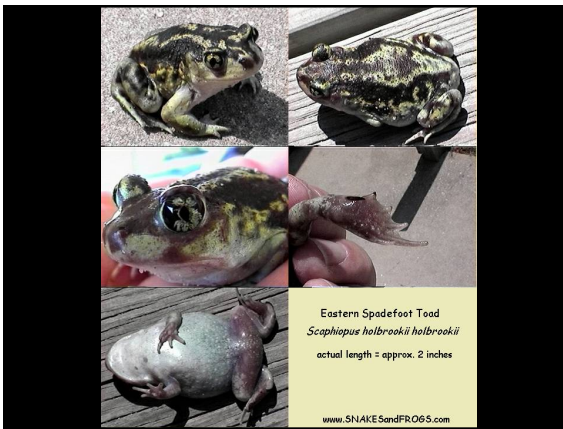




**Eastern Spadefoot
Range Map**



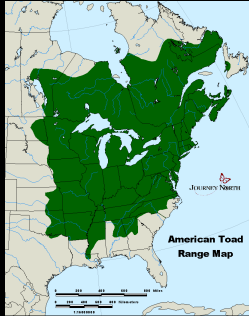




E. spadefoot

- One sharp-edged black spade on each hind foot
- Vertical pupil (toads = horizontal)
- No parotoid glands
- Two yellowish lines running down the back, forming a shape similar to an hourglass or lyre
- *Many people have allergic reactions after handling spadefoots*

American Toad Range Map



American Toad

- Dorsal coloration - note only one or two warts in each dark spot
- Parotoid separate or connected to ridge by a spur (see Pg 515)



Fowler's Toad Range Map



Fowler's Toad

- Dorsal coloration - note multiple warts in each dark spot (3 or more)
- Parotoid touches postorbital ridge (Pg515)
- A moderately large toad with a light stripe down the middle of its back (*similar to American*)



Eastern Narrowmouth Toad Range Map



Eastern narrowmouth toad



E. Narrowmouth Toad

- Approximately 1in
 - Identify by shape and general appearance alone
 - Small, plump, short limbs, pointed snout, and narrow mouth
 - Small fold in its skin across the forehead, just above the eyes
 - Coloring ranges from gray to reddish brown
 - Broad, lighter reddish dorsolateral stripe
 - Dark lines running the length of the body on each side looks like clay pot from above
 - Center of back darker
 - Strongly mottled belly
- *Narrow-mouthed toads are known for their smooth skin, short limbs, and a skin fold on the back of their head*

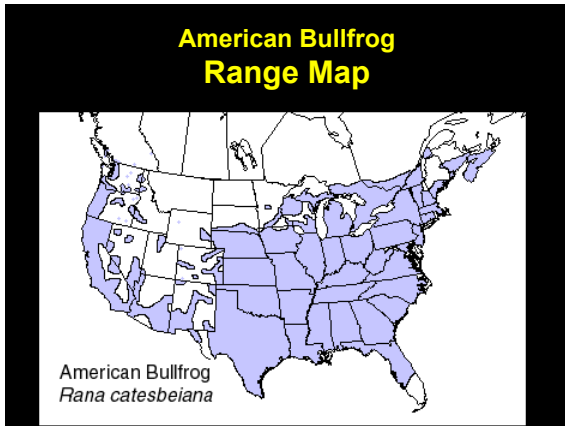
Gopher Frog Range Map



Gopher frog

- Short, stubby appearance
- Back - marked heavily with dark spots, sometimes causing a clouded pattern
- Distinct dorsolateral ridges
 - *River frog has white spots on lips*

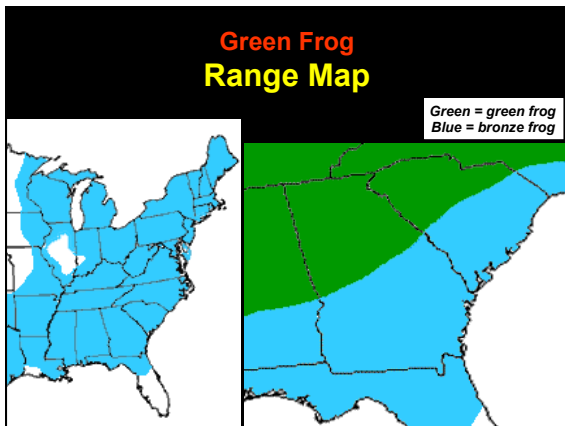




American Bullfrog

- Green or brownish green in color
- Blunt snout
- Fourth toe extends well beyond webbing
- Distinguished from the Green Frog
 - does not have dorsolateral ridges
- *The largest of the North American frogs*







Green Frog

- The color of the green frog is highly variable and is sometimes more brown than green
- Dorsolateral ridges end on the body
 - Only $\frac{3}{4}$ of the way down the back
 - In leopard frogs the ridges go all the way down
- Center of tympanum (*eardrum*) elevated
 - Larger than the eye in males
- Males can have yellow throats

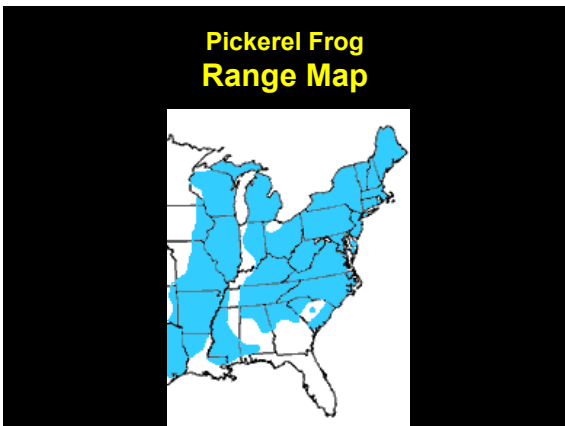
Southern Leopard Frog Range Map

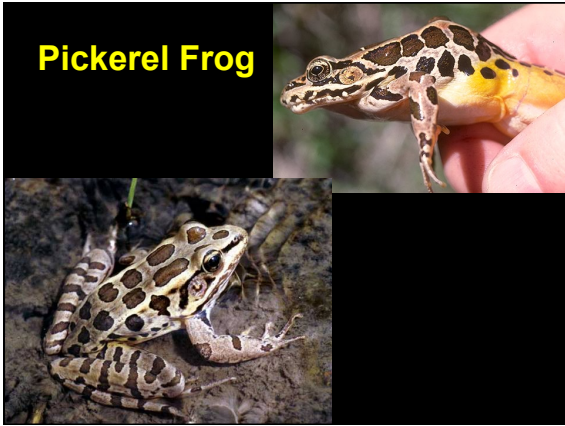


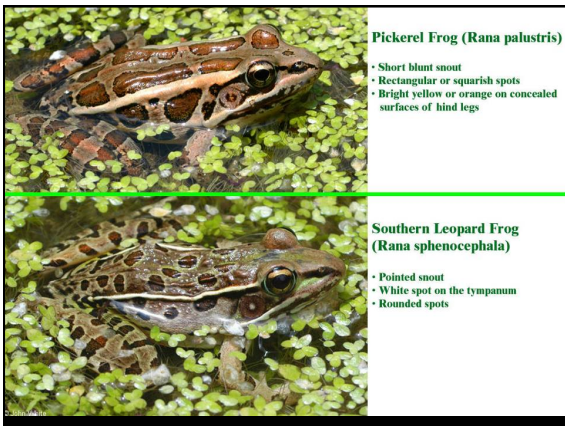


Southern Leopard Frog

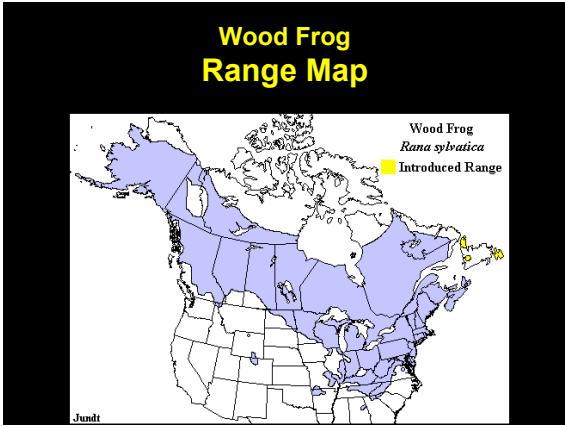
- Large frog w/ leopard-like dorsal spots
 - Some specimens do not have spots
- Light spot on center of eardrum
- Pointed snout
- Light line along upper jaw
- Unbroken dorsolateral ridges
 - Pickerel frog has rectangular or squarish dark spots, hind legs are bright yellow or orange when turned over
 - Belly is white unlike Pickerel frog





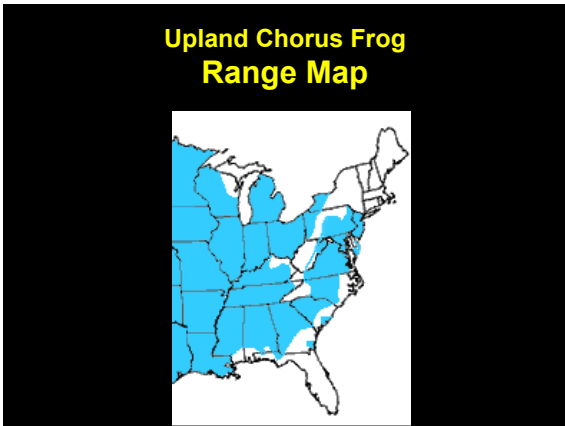


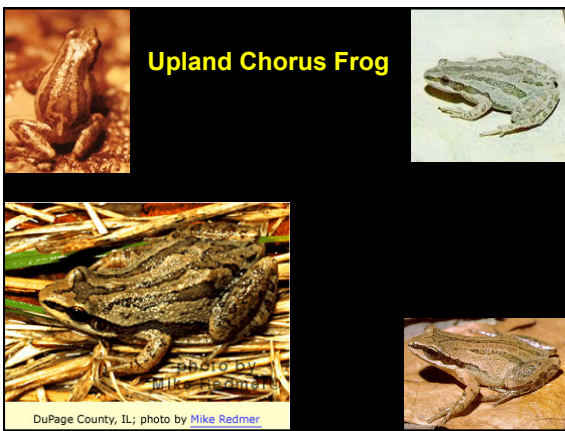


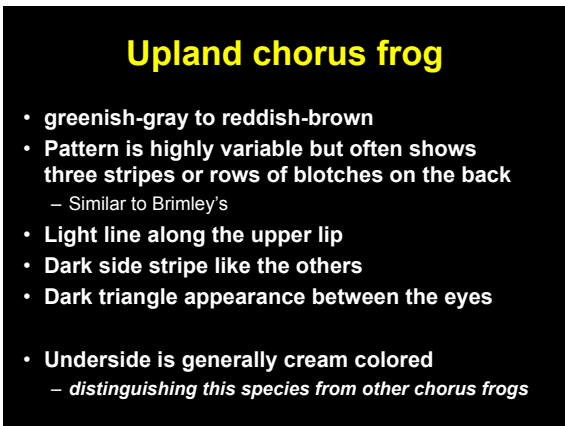




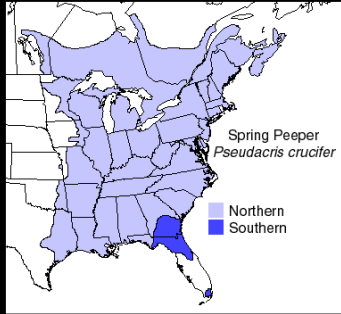
- ### Wood Frog
- Dark mask through eye
 - White stripe on the lip
 - Varies in color – usually tan to brown
 - Size and lack of toe pads distinguish it from chorus frogs







Spring Peeper Range Map



Spring Peeper

- Color varies from yellow to brown
- Dark X-shaped mark on back
- Small pads on its toes similar to treefrogs



Northern Cricket Frog Range Map



Northern Cricket Frog



Northern cricket frog

- Dark triangle between eyes
- Short hind leg (heel fails to reach snout)
- First toe is completely webbed (See Pg529)
 - Webbing more extended than on Southern
 - ... extended up to middle or > of center digit
- *Though members of the treefrog family, the cricket frogs are not climbers*

Southern Cricket Frog Range Map



Southern Cricket Frog

- Dark triangle between eyes
- Long hind leg (heel reaches beyond snout)
- First toe is not completely webbed (See Pg529)
 - Webbing less extended than on Northern



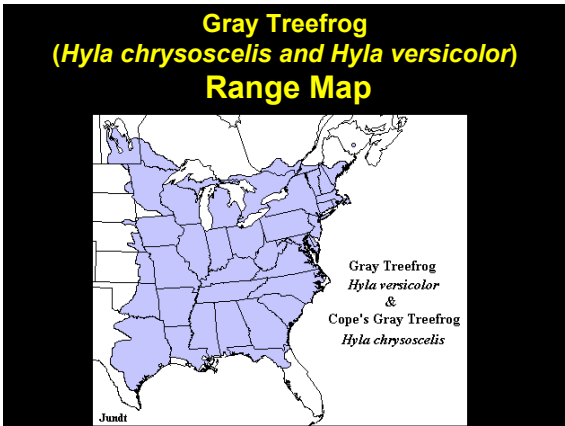
Green Treefrog Range Map



Green treefrog

- Usually bright green
- White lateral/side stripes usually run to the groin
 - Stripes not always present





Gray treefrogs

- The two species of gray treefrog (*Hyla versicolor* and *Hyla chrysoscelis*) are identical in appearance

Three photographs of gray treefrogs. The top photo shows a frog on a tree trunk. The bottom-left photo shows a frog on a red flower. The bottom-right photo shows a frog on a twig.

Gray treefrog

- Coloration normally gray (or green)
- Usually has a solid, abstract dark splotch on center of back
- Skin of back warty for a treefrog
- Light spot beneath the eye
- The two species can be distinguished by their call and by their chromosome number
 - The call of *Hyla chrysoscelis* is a faster trill
 - *Hyla chrysoscelis* also has half as many chromosomes as *Hyla versicolor*

Gray treefrog

- Orange color on the concealed portion of the leg



Barking Treefrog Range Map



Barking Treefrog



Barking Treefrog

- Generally greenish w/ dark, rounded spots on the back
 - The *spotty* treefrog
- Large toe pads
 - Toe pads set it apart from other spotted frogs such as the leopard and pickerel frog
- The largest treefrog in our region
 - Size and stout build is usually enough to distinguish this frog from other treefrogs

Absent From This Ppt.

- Bird-voiced treefrog
- Mountain chorus frog
- Crawfish frog

Frog and Toad Calls

- Refer to *Mnemonics* Handout

Just Some FYI

- You will not be tested on the FYI material following, unless otherwise stated...

What's the difference between a frog and a toad?

- Generally Speaking:
 - **Frogs** usually have smooth, moist skin and spend most of their lives in or near water
 - **Toads** usually have dry, warty-looking skin and spend more time living on land than frogs

Where do they go in the winter?

- Amphibians are "cold blooded" (**ectothermic**) animals, which means that they do not produce internal body heat. Instead, their body temperature is dependent upon that of their surroundings.
- Most species pass the winter in a dormant state underwater, either burrowing into mud, or just sitting on the bottom of ponds and swamps. Toads burrow deep into woodland soil. Recent studies revealed that a few kinds of frogs can stand being in below freezing conditions for short periods (e.g. Wood Frog and Spring Peeper).
 - Wood frogs can live north of the Arctic Circle, surviving for weeks in a frozen limbo state. This frog uses glucose in its blood as a kind of antifreeze that concentrates in its vital organs, protecting them from damage while the rest of the body freezes solid.

Calls

- Only males produce advertisement calls, but both sexes may give short warning calls or 'screams' when danger threatens
- Males can also produce distinct calls that warn away rival males that approach their calling or breeding sites

Benefits to Humans

- Their springtime choruses are a pleasure to hear, and most people enjoy seeing them
- Adult frogs and toads feed largely on insects, and destroy vast numbers of insect pests every year
 - A single cricket frog can consume about 4,800 insects in one year, 100 cricket frogs would thus eat about 480,000 insects, and 1,000 cricket frogs perhaps 4.8 million insects. Larger spp. of frogs would likely eat even greater quantities.
- The bullfrog is a valued game animal and the source of "frog legs" used for human food; Part of the food chain
 - <http://video.nationalgeographic.com/video/kids/animals-pets-kids/amphibians-kids/frog-bull-kids/>
- Biological Indicators: these sensitive animals can be used to tell a story about the environment (e.g. habitat loss, pollution, etc...).

Some Conservation Issues

- **Habitat Destruction:**
 - Loss of Wetlands, etc..
- **Pollution**
- **Acid Rain**
- **Pesticides**
- **Fragmentation**
 - e.g. roads (vehicles, isolation, & more)
- **Disease, Dr. Gray is an authority in this area!**
