

Salamanders of Tennessee

William B. Sutton, Ph.D.
Tennessee State University
01/23/2017



Caudata

- Diverse amphibian order; nearly 695 species (9.1% of all amphibians)
- Ten extant families worldwide
 - Proteidae
 - Cryptobranchidae
 - Plethodontidae
 - Ambystomatidae
 - Amphiumidae
 - Sirenidae
 - Salamandridae
 - Dicamptodontidae
 - Hynobiidae
 - Rhyacotritonidae
- Total of ~58 species in Tennessee
- Diverse array of habitats (high mountains and floodplains)



Family Plethodontidae

- Largest family (28 genera; 458 species worldwide); ~46 species in TN
- Nasolabial grooves
- Lack lungs
- Some species neotenic
- Larval stage or direct development
- Occupy a variety of habitats; diversity greatest in Blue Ridge Mtns.
- TN has the following genera: *Desmognathus*, *Plethodon*, *Eurycea*, *Hemidactylum*, *Aneides*, *Pseudotriton*, and *Gyrinophilus*



Photo by: B. Sutton

Green Salamander (*Aneides aeneus*)



- 6 species in US (5 west, 1 east)
- Associate with rock outcrops in TN
- Also very arboreal
- Green mossy/brassy markings on body
- Laterally compressed
- Square, flat toetips assist in climbing

Photos by: Bill Sutton

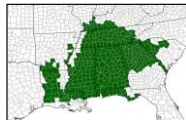
Genus *Desmognathus*

- 16 species in Tennessee
- Some almost entirely aquatic, others fully terrestrial
- Two species w/ direct development
- Hind limbs larger than fore limbs
- Light line running from eye to posterior margin of jaw
- Some species can only be distinguished based on geography and genetics
- Larvae very difficult to identify



Photos by: B. Sutton

Spotted Dusky Salamander (*Desmognathus conanti*)



- Generally low elevation (< 1000 ft elev.)
- Wavy line on dorsum
- Slight keel on tail
- "Muddy" appearance to venter

Photos by: M. Niemiller

Santeetlah Dusky Salamander (*Desmognathus santeetlah*)



- Flecking on body
- Yellowish tinge on venter
- Slight keel
- Higher elevations (> 2500 ft. elev.)

Photos by: B. Sutton

Seal Salamander (*Desmognathus monticola*)



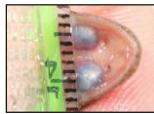
- Worm-like markings on dorsum
- Pale belly with no markings
- Keel evident on tail
- Up to ~3500 ft. elev.
- Cornified toe-tips

Black-bellied Salamander (*Desmognathus quadramaculatus*)



Photo by: B. Sutton

- Brown-rufous dorsal coloration
- Charcoal black belly
- Sharp keel on tail
- 1000 ft to highest elevations



Photos by: M. Niemiller

Shovel-nosed Salamander (*Desmognathus marmoratus*)



- Very similar to the Blackbelly Salamander
- Sharper keel on tail and shorter snout
- Nares are closed

Photos by: M. Niemiller

Pygmy Salamander (*Desmognathus wrighti*)



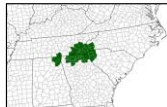
Photo by: B. Sutton



Photo by: M. Niemiller

- Look for "chevron" markings on dorsum
- Relatively small size
- No keel on the tail
- Highly terrestrial
- 2,400 ft and up in elevation

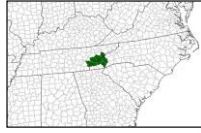
Ocoee Salamander (*Desmognathus ocoee*)



- Distinct wavy line on dorsum
- Straight dorsal line in Smokies
- Rounded tail
- Highly variable dorsal coloration
- Higher elevations

Photos by: B. Sutton and R. Hardman

Imitator Salamander (*Desmognathus imitator*)



- "May" have red cheeks
- Slightly keeled tail
- Wavy line on dorsum
- Can be difficult to distinguish from *D. ocoee*
- Higher elevations

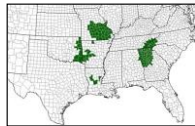
Photos by: M. Niemiller

Genus *Plethodon*

- 17 species in Tennessee
- Fully terrestrial
- Direct development
- Very high densities in some areas
- Some species can only be distinguished based on geography and genetics



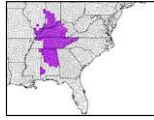
Southern Red-backed Salamander (*Plethodon serratus*)



- Bright red dorsum
- Serrated edges along dorsal stripe
- Primarily found at lower elevations

Photos by: M. Niemiller and B. Sutton

Northern Zigzag Salamander (*Plethodon dorsalis*)



- Distinct wavy line on dorsum
- Chestnut-reddish stripe down dorsum
- Orange-red shoulder patch
- Confusion on exact species in TN
- Lower elevation woodland habitats

Photos by: Bill Sutton

Red-cheeked Salamander (*Plethodon jordani*)



Photo by: B. Sutton



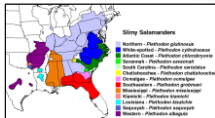
Photo by: R. Hardman

- Endemic to the Great Smoky Mtns.
- Found at elevations >2,800 ft.
- Bluish-gray dorsum coloration



Photo by: R. Hardman

Slimy Salamander *Plethodon glutinosus*



Slimy Salamanders

- Northern - *Plethodon glutinosus*
- Blue-cheeked - *Plethodon cyaneus*
- Alabama Gray - *Plethodon chlorostictus*
- Blue-spotted - *Plethodon cyaneus*
- Orange - *Plethodon glutinosus*
- Yellow - *Plethodon glutinosus*
- Black-spotted - *Plethodon glutinosus*
- Black-spotted - *Plethodon glutinosus*
- Black-spotted - *Plethodon glutinosus*
- Black-spotted - *Plethodon glutinosus*
- Black-spotted - *Plethodon glutinosus*
- Black-spotted - *Plethodon glutinosus*
- Black-spotted - *Plethodon glutinosus*
- Black-spotted - *Plethodon glutinosus*
- Black-spotted - *Plethodon glutinosus*

- White spotting on dorsum and lateral surface
- "Glue-like" substance excreted when handled

Photos by: B. Sutton



Genus *Eurycea*

- 7 species in Tennessee
- Most species brightly colored: yellow, red, orange
- Both hind and fore limbs approximately equal size
- Males with conspicuous mental glands and cirri during breeding season
- Larvae can be difficult to identify
- Known as "brook salamanders"



Blue Ridge Two-lined Salamander (*Eurycea wilderae*)



Photo by: R. Hardman



Photo by: M. Niemiller

- Yellow to orange dorsal coloration
- Two single black lines on the dorsum
- Present at most elevations above 1000 ft
- Also populations on Cumberland Plateau

Long-tailed Salamander (*Eurycea longicauda*)



- Tail comprises >60 percent of body
- Chevron markings on lateral surface of tail
- Found in seeps or other low-flow envs.

Photos by: B. Sutton

Four-toed Salamander (*Hemidactylium scutatum*)



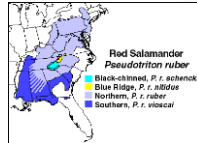
Photo by: M. Niemiller

- Monotypic genus
- Brownish dorsum
- Square blunt snout
- Constriction at base of tail
- Pepperish belly
- Found in sphagnum bogs



Photo by: B. Sutton

Red Salamander (*Pseudotriton ruber*)



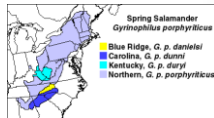
- Two species of *Pseudotriton* worldwide
- Robust cigar-shaped body
- Striking red body coloration
- Black flecks on the dorsal and lateral surfaces
- Golden iris
- Low order streams and seeps up to 1500 m in elevation



Photos by: B. Sutton

Spring Salamander (*Gyrinophilus porphyriticus*)

- Four species of *Gyrinophilus*; three in TN
- Bright orange to salmon body coloration
- Large squarish snout with pronounced canthus rostralis
- Large and fleshy keeled tail
- Commonly found associated with stream, seep, and cave environments



Photos by: B. Sutton and M. Niemiller

Family Ambystomatidae

- One genus; 32 total species (six species in TN).
Fully new-world distribution

- Large, robust adults
- Costal grooves
- Adults possess lungs
- Most reproduce in ephemeral ponds; some in streams
- Some species neotenic
- Larval stage



Photos by: B. Sutton

Spotted Salamander (*Ambystoma maculatum*)

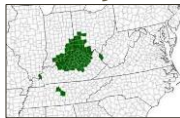


- Large conspicuous yellow or orange spots
- Dark gray dorsal coloration
- Moves to breeding ponds in mass migrations



Photos by: B. Sutton

Streamside Salamander (*Ambystoma barbouri*)



- Brown-gray dorsal coloration
- Gray/silver lichen-like pattern on venter
- Breeds late December – March
- Seasonal first order streams (mid-TN)
- Slab limestone rock (limited predators)



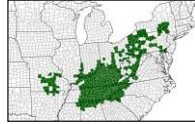
Photos by: B. Sutton

Eastern Hellbender (*Cryptobranchus alleganiensis*)

- Cryptobranchidae: two genera (3 species worldwide); 1 species in TN



Photo by: B. Sutton



- Broad, flat head
- No external gills
- Keratinized toe tips
- Broad, flat paddle shaped tail
- Extra skin flaps on lateral surface

Mudpuppy (*Necturus maculosus*)

- Proteidae: two genera (~6 species worldwide); 1 species in TN



Photo by: B. Sutton



- Broad, flat head
- External gills (reddish tinge)
- Spotted pattern on dorsum
- Four toes on hindlimbs
- Broad, flat paddle shaped tail
- Max. total length ~400 mm



Photo by: M. Niemiller

Red-Spotted Newt (*Notophthalmus viridescens*)

- Salamandridae: 21 genera (115 species worldwide); 1 species in TN



- Bright orange skin
- Cranial crests above eyes
- Complex three stage life history
- Rough glandular skin
- Toxic skin secretions
- Becomes *louisianensis* subspecies west of TN river in west TN