Salamanders of Tennessee

WFS 433/533
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Caudata
- Diverse amphibian order; nearly 659 species (9.1% of all amphibians)
- Nine extant families worldwide
  - Proteidae
  - Cryptobranchidae
  - Plethodontidae
  - Ambystomatidae
  - Amphiumidae
  - Sirenidae
  - Salamandridae
  - Hynobiidae
  - Rhyacotritonidae
- Total of ~58 species in Tennessee
- Diverse array of habitats (high mountains and floodplains)

Family Plethodontidae
- Largest family of salamanders (27 genera; >375 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, Hemidactylium, Aneides, Pseudotriton, and Gyrinophilus

Photo by: B. 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
- Line 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

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**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

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**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

Photo by: M. Niemiller

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Black-bellied Salamander
*(Desmognathus quadramaculatus)*

- Brown-rufous dorsal coloration
- Charcoal black belly
- Sharp keel on tail
- 3000 ft to highest elevations

Photos by: M. Niemiller

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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*)

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

Photo by: B. Sutton

Ocoee Salamander
(*Desmognathus ocoee*)

- Distinct wavy line on dorsum
- 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

Photos by: M. Niemiller

Southern Zig-zag Salamander (*Plethodon ventralis*)

- 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
Jordan’s Salamander
(Plethodon jordani)

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

Photo by: R. Hardman

Slimy Salamander
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*)

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

Photo by: R. Hardman

Cave Salamander
(*Eurycea lucifuga*)

- Primarily "twilight" zone of caves
- Spotted pattern on dorsum

Photo by: B. Sutton

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*)

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

Red Salamander
(*Pseudotriton ruber*)

- Three 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

Green Salamander
(*Aneides aeneus*)

- 7 species of *Aneides* worldwide; 1 in TN
- Green and black lichen dorsal coloration
- Laterally compressed body structure
- Squarish toe tips with sticky toe pads
- Commonly inhabits rock outcrops and bluffs
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

Eastern Hellbender  
(*Cryptobranchus alleganiensis*)

- Cryptobranchidae: two genera (3 species worldwide); 1 species in TN
- Broad, flat head
- No external gills
- Keratinized toe tips
- Broad, flat paddle shaped tail
- Extra skin flaps on lateral surface

Photo by: B. Sutton

Mudpuppy (*Necturus maculosus*)

- Proteidae: two genera (~7 species worldwide); 1 species in TN
- 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: B. Sutton

Photo by: M. Niemiller
Three-toed Amphiuma  
(*Amphiuma tridactylum*)

- Amphiumidae: one genus (3 species worldwide); 1 species in TN
- Eel-like appearance
- Rudimentary front and hindlimbs present
- Three small toe-like structures on limbs
- Floodplains and other mucky, low-oxygen environments

Lesser Siren  
(*Siren intermedia*)

- Sirenidae: two genera (4 species worldwide); 1 species in TN
- Eel-like appearance
- Only forelimbs present; no hindlimbs
- Also found in mucky, low-oxygen environments

Family Ambystomatidae

- One genus; 31 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
Tiger Salamander
(*Ambystoma tigrinum*)

- Large, robust salamander with olive dorsal coloration
- Large paddle-shaped tail
- Broad distribution

Photo by: L. Marshall

Mole Salamander
(*Ambystoma talpoideum*)

- Relatively large head
- Stocky and plump body
- Flecking on lateral surface

Photos by: M. Niemiller

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
Marbled Salamander
(*Ambystoma opacum*)
- White and black marbled dorsal coloration
- Breeds in fall months
- Nests communally

Photos by: B. Sutton

Smallmouth Salamander
(*Ambystoma texanum*)
- Head small relative to body
- Brown or grayish body coloration
- Fleshy keeled tail
- Lichen-like markings on lateral surface

Photos by: B. Sutton

Red-Spotted Newt
(*Notophthalmus viridescens*)
- Salamandridae: 15-20 genera (70 species worldwide); 1 species in TN
- Bright orange skin
- Cranial crests above eyes
- Complex three stage life history
- Rough glandular skin
- Toxic skin secretions