

# Salamanders of Tennessee

WFS 433/533  
01/20/2015



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## Caudata

- Diverse amphibian order; nearly 675 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)



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## Family Plethodontidae

- Largest family (26 genera; 446 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

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## 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

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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

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### 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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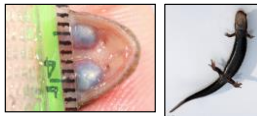
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### Black-bellied Salamander (*Desmognathus quadramaculatus*)



Photo by: B. Sutton

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



Photos by: M. Niemiller

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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

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### 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

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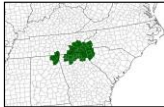
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### Ocoee Salamander (*Desmognathus ocoee*)



Photos by: B. Sutton and R. Hardman



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

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### Imitator Salamander (*Desmognathus imitator*)



Photos by: M. Niemiller

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

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## 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




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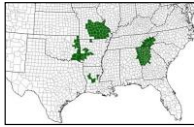
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## Southern Red-backed Salamander (*Plethodon serratus*)



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

Photos by: M. Niemiller and B. Sutton

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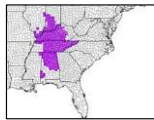
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## Southern Zig-zag Salamander (*Plethodon ventralis*)



- 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

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### 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

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### 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

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### Four-toed Salamander (*Hemidactylium scutatum*)



Photo by: M. Niemiller

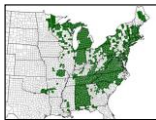


Photo by: B. Sutton

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

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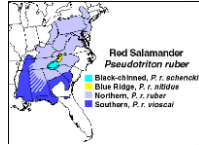
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## Red Salamander (*Pseudotriton ruber*)



- 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

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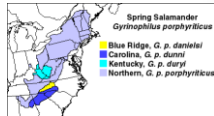
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## Spring Salamander (*Gyrinophilus porphyriticus*)

- 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

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## 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

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### 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

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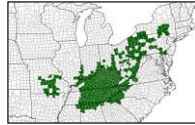
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### Eastern Hellbender (*Cryptobranchus alleganiensis*)

- 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

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### Mudpuppy (*Necturus maculosus*)

- Proteidae: two genera (~7 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

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# 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

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