

Catalogue of American Amphibians and Reptiles.

IRELAND, PATRICK H. 1979. *Eurycea longicauda*.

***Eurycea longicauda* (Green)
Long-tailed salamander**

S(alamandra) longicauda Green, 1818:351. Type-locality, "New Jersey," restricted to the "vicinity of Princeton" by Schmidt (1953:53). No type known to exist.

Cylindrosoma longicauda: Tschudi, 1838:58. New combination.

Saurocercus longicauda: Fitzinger, 1843:94. New combination.

S(pelerpes) longicauda: Baird, 1849:287 (in part). New combination.

Geotriton longicauda: Garman, 1884:39. New combination.

Eurycea longicauda: Stejneger and Barbour, 1917:19. New combination.

• CONTENT. Three subspecies are recognized: *longicauda*, *melanopleura*, and *guttolineata*.

• DIAGNOSIS. Adults rarely exceed 70 mm snout to vent (SVL) and 155 mm total length. *Eurycea longicauda* differs from other metamorphosing *Eurycea* by: toes of adpressed limbs separated by fewer than three costal grooves but not overlapping; tail length usually greater than SVL (in 88% of 1017 specimens measured); yellow, yellow orange, or yellow brown ground color with many conspicuous dorsal black spots usually arranged in three irregular, continuous or discontinuous lines. Lateral black spots are numerous on the body and tail. The venter is pale yellow to cream, and immaculate to heavily mottled with irregular black spots which may coalesce. The modal range of costal grooves is 13–14 and the total observed range of vomerine teeth is 12–39. Parasphenoid teeth are in two elongated patches widely separated from the vomerine. Relative lengths of the hind toes are $1 < 5 < 2 < 4 < 3$ or occasionally $1 < 5 < 2 < 3 < 4$ in *E. l. melanopleura*.

• DESCRIPTIONS. Bishop (1941, 1943), Smith (1961), Cochran and Goin (1970), and Conant (1975) describe adult *E. l. longicauda*. Bishop (1943) and Anderson and Martino (1966) describe larvae. Mohr (1943) and Franz (1964) describe eggs. Wake (1966) and Martof and Rose (1962) describe cranial osteology. Size of adults is described by Ladd (1947) and Miller (1964). Bishop (1943), Smith (1961), Cochran and Goin (1970), Collins (1974), and Conant (1975) describe adult *E. l. melanopleura* and Bishop (1943) and Ireland (1971) describe larvae. Bishop (1943), Smith (1961), Cochran and Goin (1970) and Conant (1975) describe *E. l. guttolineata*.

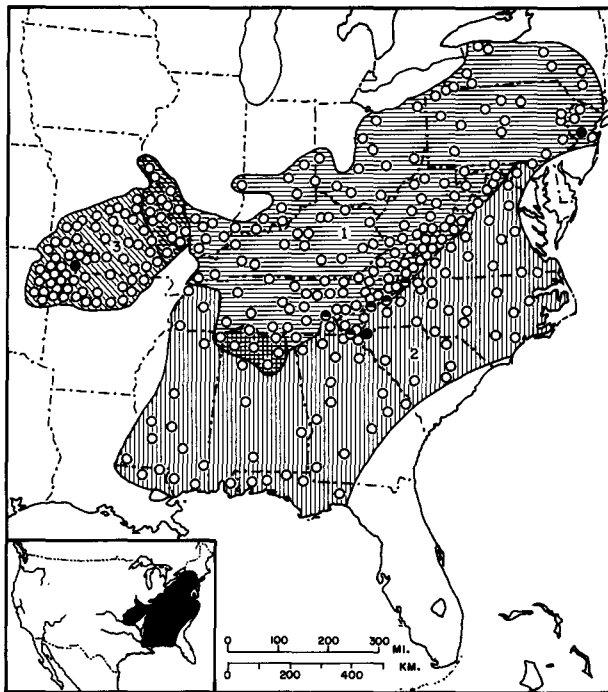
• ILLUSTRATIONS. Bishop (1941), Huheey and Stupka (1967), Cochran and Goin (1970) and Conant (1975) present photographs of *E. l. longicauda*. Fowler (1953) presents photographs of adults and eggs. Bishop (1941) and Anderson and Martino (1966) illustrate larvae and Martof and Rose (1962) present a drawing of a skull. Photographs of adult *E. l. guttolineata* are in Bishop (1943), Smith (1961), Huheey and Stupka (1967), Cochran and Goin (1970), Collins (1974), and Conant (1975). Cochran (1961) presents excellent photographs of *E. l. melanopleura* (labeled as *E. melanopleura*) and *E. l. longicauda*; however, *E. l. longicauda* is labeled as *E. lucifuga* (p. 40) and the color plate (13) of *E. lucifuga* is labeled as *E. longicauda*. See Valentine (1962) for photographs of *E. l. longicauda* × *E. l. guttolineata* intergrades and Smith (1961) for photographs of *E. l. longicauda* × *E. l. melanopleura* intergrades. Hutchison (1956) has photographs of purported *E. l. longicauda* × *E. lucifuga* intergrades described by Mittleman (1942).

• DISTRIBUTION. *Eurycea longicauda* is widely distributed from New York south of the Adirondack Mountains, south in the Piedmont region, Blue Ridge and Allegheny Mountains, and the Appalachian Plateau, to western Florida, west to the Mississippi River Valley and north to southern Illinois. West of the Mississippi River *E. longicauda* occurs in the Ozark Plateau of Missouri, Kansas, Oklahoma, and Arkansas and in the Boston Mountains of Oklahoma and Arkansas. A record for *E. longicauda* in southwestern Arkansas (specimen in the University of Kansas Museum of Natural History, labeled Lewisville, Lafayette County, Arkansas) is not mapped. This record is 150 miles from the

nearest verified population, and my repeated attempts to confirm it have failed. Dowling (1957) regarded this and other Lewisville records with suspicion.

• FOSSIL RECORD. None.

• PERTINENT LITERATURE. Brimley (1896, 1939), Dunn (1926), Bishop (1941, 1943), Peters (1946), Mittleman (1950), Martof (1955), Cochran (1961), Rubenstein (1969), Cochran and Goin (1970), Nickerson (1972), and Conant (1975) present general descriptions of habitat, range, and life histories. Fisher (1887) and Fowler (1943) discuss habitat and range in the District of Columbia. Hurter (1911), Myers (1958a), and Nickerson and Krager (1973) discuss habitat and range in Missouri. Hassler (1932) discusses the range in New York. Carr (1940) and Carr and Goin (1955) discuss habitat and range in Florida. Green (1937, 1941, 1964) and Green and Dowling (1966) discuss habitat and range in West Virginia. Wood (1947) and Eaton (1953) discuss habitat and range in North Carolina. Grimmer and Langebartel (1948), Stein (1954), Smith and Minton (1958), and Klimstra and Hutchinson (1965) discuss habitat and range in Illinois. Smith (1961) discusses range, habitat, and meristic and morphometric variation in Illinois. Sinclair (1950), Barr (1952), and Endsley (1954) discuss habitat and range in Tennessee. Heilman (1951), Bell (1960), and Welsh (1962) discuss habitat and range in Pennsylvania. Duellman (1951), Muchmore (1955), and Seibert and Brandon (1960) discuss habitat and range in Ohio. Maldonado-Koerdell (1951), and Collins (1974) discuss habitat and range in Kansas. Chermock (1952a, 1952b) and Mount (1975) discuss habitat and range in Alabama. Barbour (1953, 1955) and Bush (1959) discuss habitat and range in Kentucky. Anderson, Limer, and Etheridge (1953) discuss habitat in Louisiana. Bragg (1955) and Bragg and Hudson (1951) discuss habitat and range in Oklahoma. Smith and List (1955) discuss habitat and range in Mississippi. Cooper (1955) and Reed (1956) discuss habitat and range in Maryland. Martof (1955, 1956) discusses habitat and range in Georgia. Dowling (1957) discusses habitat and range in Arkansas. Holman (1960) discusses habitat and range in Indiana. Huheey (1965) and Huheey and Stupka (1967) discuss habitat and range in the Great Smoky Mountains National Park. Schlauch (1972) discusses range in New Jersey. Minton (1972) discusses habitat and range in Indiana. Occurrence of cave populations is discussed by Dearolf (1956), Brode (1958), Myers (1958b), Huheey and Brandon (1960),



MAP. Solid circles mark type-localities; open circles are other records; half-solid circles indicate areas of sympatry. Areas of intergradation are indicated by overlapping shading patterns.

Barr (1961), Green and Brant (1966), Ireland (1971), and Knight (1972). Houghton (1903) describes skeletal anatomy. Hilton (1953) describes the ventricular system of the brain. Bernstein (1953) describes skin anatomy. Martof and Rose (1962) and Wake (1966) describe osteology and discuss evolution. Wonderly (1963) describes digestive system anatomy. Nitecki (1965) describes vascular system anatomy. Dunn (1918), Bailey (1937), Mittleman (1942), Martof and Humphries (1955), Smith (1961), Valentine (1962), and Smith (1964) describe intergrades. Mohr (1943), Brode and Gunter (1958), Rossman (1960), Franz (1964), and Ireland (1971) describe eggs and larvae. Anderson and Martino (1966) present multistage larval descriptions and photographs. Mohr (1944) and Franz and Harris (1965) discuss movement. Bell (1955) describes an aggregation of individuals. Eaton (1956) discusses larval identification. Sinclair (1951) discusses transformation. Tinkle (1952), Gordon (1953), Hutchison (1956) and Anderson and Martino (1966) discuss reproduction. Bruce (1970) and Ireland (1974) discuss geographic variation in reproductive patterns. Food is described by Tinkle (1952), Hutchison (1958), and Anderson and Martino (1967). Hutchison (1961) and Sealander and West (1964) discuss temperature tolerance and Brattstrom (1963) discusses thermal ecology. Freeman (1955) discusses ecology. Cooper (1960) discusses mating behavior. Czopek (1962) describes vascularization of respiratory surfaces. Williams, Martin, and Brandon (1976) describe sperm associations. Thireau (1975) discusses morphometrics. Olmo and Moresclachi (1975) discuss genome evolution and cell size.

• **ETYMOLOGY.** The name *longicauda* combines two Latin words meaning "long" and "tail"; *guttolineata* combines two Latin words meaning "spots" or "marks" and "lines," referring to the conspicuous three lines formed by spots on this form; *melanopleura* combines two Greek words meaning "black" and a "laterally positioned part of the body" referring to the dark sides of this form.

1. *Eurycea longicauda longicauda* (Green)

Salamandra. *longicauda* Green 1818:351. See species synonymy.

Eurycea longicauda longicauda: Bailey, 1937:6. First use of trinomial.

Eurycea longicauda pernix Mittleman, 1942:101. Type-locality, "along Jimmie Strahl Creek (tributary of Salt Creek), Brown County State Park, two and five tenths miles southeast of Nashville, Brown County, Indiana." Holotype, Mus. Comp. Zool., Harvard University, 25569, adult male, collected by M. E. and M. B. Mittleman, 22 August 1942 (not examined by author).

• **DEFINITION.** A moderate sized salamander rarely exceeding 70 mm SVL with an orange to yellow orange ground color with black or brown spots that tend to coalesce on the sides to form lateral bands that delineate a light dorsal stripe, usually bisected by a mid-dorsal dark stripe. Sides have elongate black spots that tend to form vertical bands especially on the tail. The belly is immaculate, cream to cream-yellow.

• **REMARKS.** Hutchison (1956) considered *E. l. pernix* a synonym of *E. l. longicauda* and I cannot distinguish *E. l. pernix* topotypes from *E. l. longicauda*.

2. *Eurycea longicauda guttolineata* (Holbrook)

Salamandra guttolineata Holbrook, 1838:61. Type-locality, "Greenville," Greenville County, South Carolina. Syntypes: Acad. Natur. Sci. Philadelphia 716-7. Examined by author and are in very poor condition.

S(pelerpes). *guttolineata*: Baird, 1849:287. First use of combination.

Cylindrosoma guttolineatum: Duméril, Bibron, and Duméril, 1854:79. First use of combination.

Geotriton guttolineata: Garman, 1884:39. First use of combination.

Eurycea gutto-lineata: Stejneger and Barbour, 1917:19. First use of combination.

Eurycea longicauda guttolineata: Bailey, 1937:6. First use of trinomial.

• **DEFINITION.** A moderate sized salamander rarely exceeding 70 mm SVL with a tan to yellow ground color. A dark mid-dorsal

stripe bisects a light dorsal band which is flanked by distinct lateral dark stripes. Vertical black bars are present on the tail. The belly is gray and mottled with numerous small irregular dark spots.

3. *Eurycea longicauda melanopleura* (Cope)

Spelerpes melanopleurus Cope, 1893:383. Type-locality, "Raley's [Riley's?] Creek, one of the head tributaries of the White River," Missouri. Syntypes: Acad. Natur. Sci. Philadelphia 10456-60 (10457-10459, examined by author, are recently transformed individuals that do not show the adult color pattern).

Spelerpes stejneri Eigenmann, 1901:189. Type-locality, "Rock House Cave [Barrie County], Missouri." Location of holotype unknown. "Cotype" (paratype) Mus. Comp. Zool. 2551 identified by author as *E. l. melanopleura*.

Eurycea melanopleura: Stejneger and Barbour, 1917:19. First use of combination.

Eurycea longicauda melanopleura: Bishop, 1943:428. First use of trinomial.

• **DEFINITION.** A moderate sized salamander smaller than the other subspecific forms of this species. The largest specimen examined by the author was 64 mm SVL. The ground color is yellow to yellow brown. The numerous black dorsal spots are frequently arranged in a very irregular broad mid-dorsal row flanked by equally broad and irregular lateral rows that are marked with numerous white flecks and spots. The lateral bands extend down to the edge of a pale yellow belly which is mottled with irregular, often indistinct, light brown to gray spots.

COMMENT

Eurycea l. longicauda and *E. l. guttolineata* apparently intergrade in northern Alabama and adjacent states (Valentine, 1962), but along the Blue Ridge escarpment they are sympatric without evident intergradation (see map). Some workers feel that *guttolineata* and the apparent intermediate populations found in northern Alabama both warrant recognition as species but the evidence is inconclusive. *E. l. guttolineata* is considered a form of the coastal plain and piedmont but it reaches elevations up to 975 m (3200 ft). *Eurycea l. longicauda* is typically found at higher elevations but it extends well into the piedmont in the northeastern and southeastern part of its range. *Eurycea longicauda* crosses the Mississippi River Valley only in southern Illinois and eastern Missouri where *E. l. longicauda* and *E. l. melanopleura* intergrade in an apparent zone of secondary contact. West of the Mississippi River Valley, *E. l. melanopleura* is restricted to the Boston Mountains and Ozark Plateau.

Mittleman (1942) reported *E. l. longicauda* × *E. lucifuga* intergrades and treated *lucifuga* as a subspecies of *longicauda*. The reported *longicauda* × *lucifuga* intergrades (Univ. Michigan Mus. Zool. 56388, 77393, 86578) have been examined by many workers without a consensus of opinion. This material may be hybrid or it may be unusually patterned *E. l. longicauda*. Smith (1964) reported *E. l. melanopleura* × *E. lucifuga* intergrades from Arkansas. This material was deposited in the Museum of Biology at Arkansas College, Batesville, Arkansas, where I located two specimens (now nos. 1092-1093 in my personal collection) identified as "*E. lucifuga*-*E. longicauda* hybrids" collected by C. C. Smith from Foshee Cave, 5 miles West of Locust Grove, Independence County, Arkansas, April 24, 1958. I identify these as recently transformed *E. l. melanopleura*. Recently transformed *E. l. melanopleura* are difficult to distinguish from *E. lucifuga* (see discussion in Ireland, 1971).

LITERATURE CITED

- Anderson, James D., and P. J. Martino. 1966. The life history of *Eurycea l. longicauda* associated with ponds. Amer. Midland Natur. 75(2):257-279.
- , and —. 1967. Food habits of *Eurycea longicauda longicauda*. Herpetologica 23(2):105-108.
- Anderson, Paul K., E. A. Liner, and R. E. Etheridge. 1953. Notes on amphibian and reptile populations in a Louisiana pineland area. Ecology 33(2):274-278.
- Bailey, Joseph R. 1937. Notes on plethodont salamanders of the southeastern United States. Occas. Pap. Mus. Zool. Univ. Michigan (364):1-10.
- Baird, Spencer F. 1849. Revision of the North American tailed-batrachia, with description of new genera and species. J. Acad. Natur. Sci. Philadelphia. 2nd series 1(23):281-294.

- Barbour, Roger W. 1953. The amphibians of Big Black Mountain, Harlan County, Kentucky. *Copeia* 1953(1):84-89.
- 1955. The salamander *Eurycea longicauda pernix* in Kentucky. *Ibid.* 1955(4):309.
- Barr, Thomas C., Jr. 1952. Notes on the occurrence of the long-tailed salamander, *Eurycea longicauda pernix*, in middle Tennessee. *J. Tennessee Acad. Sci.* 27(4):310.
- 1961. Caves of Tennessee. *Bull. Geol. Surv. Tennessee* 64:vii + 597.
- Bell, Edwin, L. 1955. An aggregation of salamanders. *Proc. Pennsylvania Acad. Sci.* 29:265-266.
- 1960. Observations on the amphibians and reptiles of Huntingdon County, Pennsylvania. *Ibid.* 34:159-161.
- Bernstein, J. 1953. Structural modifications of the amphibian skin. *Proc. Pennsylvania Acad. Sci.* 27:204-211.
- Bishop, Sherman C. 1941. The salamanders of New York. *New York State Mus. Bull.* (324):1-365.
- 1943. Handbook of salamanders: the salamanders of the United States, of Canada, and of Lower California. *Comstock Publ. Co., Ithaca, New York.* xiv + 555 p.
- Bragg, Arthur N. 1955. The Amphibia of Cherokee County, Oklahoma. *Herpetologica* 11(1):25-30.
- , and W. F. Hudson. 1951. New county records of Salientia and a summary of known distribution of Caudata in Oklahoma. *Great Basin Natur.* 11(3/4):87-90.
- Brattstrom, Bayard H. 1963. A preliminary review of the thermal requirements of amphibians. *Ecology* 44:238-255.
- Brimley, Clement S. 1896. Batrachia found at Raleigh, North Carolina. *Amer. Natur.* 30(4):500-501.
- 1939. Reptiles and amphibians of North Carolina [continued, part 5]. *Carolina Tips* 2(5):2 p.
- Brode, William E. 1958. The occurrence of the pickerel frog, three salamanders and two snakes in Mississippi caves. *Copeia* 1958(1):47-48.
- , and G. Gunter. 1958. Egg clutches and prehensilism in the slimy salamander. *Herpetologica* 13(4):279-280.
- Bruce, Richard C. 1970. The larval life of the three-lined salamander, *Eurycea longicauda guttolineata*. *Copeia* 1970(4):776-779.
- Bush, Francis M. 1959. The herpetofauna of Clemons Ford, Breathitt County, Kentucky. *Trans. Kentucky Acad. Sci.* 20(1-2):11-18.
- Carr, Archie F., Jr. 1940. A contribution to the herpetology of Florida. *Univ. Florida Publ. Biol. Sci. Ser.* 3(1):1-118.
- , and C. J. Goin. 1955. Guide to the reptiles, amphibians and fresh-water fishes of Florida. *Univ. Florida Press, Gainesville.* ix + 341 p.
- Chermock, R. L. 1952a. A key to the amphibians and reptiles of Alabama. *Mus. Pap. Geol. Surv. Alabama* (33):1-88.
- 1952b. Additional records of salamanders from Alabama. *J. Alabama Acad. Sci.* 21:48-49.
- Cochran, Doris M. 1961. Living amphibians of the world. *Doubleday and Co., Garden City, New York.* 199 p.
- , and C. J. Goin. 1970. The new field book of reptiles and amphibians. G. P. Putnam's Sons, New York. xxiii + 359 p.
- Collins, Joseph T. 1974. Amphibians and reptiles in Kansas. *Univ. Kansas Mus. Natur. Hist. Public Ed. Ser.* (1):x + 283.
- Conant, Roger. 1975. A field guide to reptiles and amphibians of eastern and central North America. Second Edition. *Houghton Mifflin Co., Boston.* xviii + 429 p.
- Cooper, John E. 1955. Notes on the amphibians and reptiles of southern Maryland. *Maryland Natur.* 23(3/4):90-100.
- 1960. The mating antic of the long-tailed salamander. *Maryland Natur.* 30:17-18.
- Cope, Edward D. 1893. On a collection of Batrachia and Reptilia from southwest Missouri. *Proc. Acad. Natur. Sci. Philadelphia* 1893:383-385.
- Czopek, Juliusz. 1962. Vascularization of respiratory surfaces in some Caudata. *Copeia* 1962(3):576-587.
- Davis, N. S., and F. L. Rice. 1883. List of Batrachia and Reptilia of Illinois. *Bull. Chicago Acad. Sci.* 1:25-32.
- Dearolf, K. 1956. A survey of North American cave vertebrates. *Proc. Pennsylvania Acad. Sci.* 30:301-310.
- Dowling, Herndon G. 1956. Geographic relations of Ozarkian amphibians and reptiles. *Southwest. Natur.* 1(4):174-189.
- 1957. A review of the amphibians and reptiles of Arkansas. *Occas. Pap. Univ. Arkansas Mus.* (3):1-51.
- Duméril, A. M. C., G. Bibron, and A. H. A. Duméril. 1854. *Erpetologie Generale ou Historie Naturelle complete des Reptiles.* Vol. 9. *Librarie Encyclopedique de Roret, Paris.* xx + 440 p.
- Dunn, Emmett R. 1918. The collection of the Amphibia Caudata of the Museum of Comparative Zoology. *Bull. Mus. Comp. Zool.* 62:445-471.
- 1926. The salamanders of the family Plethodontidae. *Smith College 50th Anniversary Publ., Northampton, Massachusetts.* viii + 441 p.
- Eaton, T. H., Jr. 1953. Salamanders of Pitt County, North Carolina. *J. Elisha Mitchell Sci. Soc.* 69(1):49-53.
- 1956. Larvae of some Appalachian plethodontid salamanders. *Herpetologica* 12(4):303-311.
- Eigenmann, C. H. 1901. Description of a new cave salamander *Spelerpes stejnegeri*, from the caves of southwestern Missouri. *Trans. Amer. Microscop. Soc.* 22:189-194.
- Endsley, J. R. 1954. An annotated listing of a herpetological collection mainly from Tennessee. *J. Tennessee Acad. Sci.* 29(1):36-41.
- Fisher, A. K. 1887. *Spelerpes guttolineatus* Holbrook, in the vicinity of Washington, D.C. *Amer. Natur.* 21:9-12.
- Fitzinger, L. 1843. *Systema reptilium.* Braumiller et Seidel, Vienna. 106 + vi p.
- Fowler, James A. 1943. A new locality record for Holbrook's salamander in the District of Columbia vicinity. *Proc. Biol. Soc. Washington* 56:167.
- 1953. Salamander haven. *Frontiers* 17:112-113.
- Franz, R. 1964. The eggs of the long-tailed salamander from a Maryland cave. *Herpetologica* 20(3):216.
- , and H. Harris. 1965. Mass transformation and movement of larval long-tailed salamanders, *Eurycea longicauda longicauda* (Green). *J. Ohio Herpetol. Soc.* 5(1):32.
- Freeman, H. W. 1955. An ecological study of the land plants and cold blooded vertebrates of the Savannah River project area, part V. The amphibians and reptiles of the Savannah River project area. 1. Caudate Amphibia. *Univ. South Carolina Publ. Biol.* 1:227-238.
- Garman, Samuel 1884. The North American reptiles and batrachians. A list of the species occurring north of the Isthmus of Tehuantepec, with references. *Bull. Essex Inst.* 16:1-46.
- Gentry, Glenn. 1955. An annotated check list of the amphibians and reptiles of Tennessee. *J. Tennessee Acad. Sci.* 30:168-176.
- Gordon, Robert E. 1953. A population of Holbrook's salamander, *Eurycea longicauda guttolineata* (Holbrook). *Tulane Stud. Zool.* 1(4):55-60.
- Green, Jacob. 1818. Descriptions of several species of North American Amphibia, accompanied with observations. *J. Acad. Natur. Sci. Philadelphia* 1(2):348-359.
- Green, N. Bayard. 1937. The amphibians and reptiles of Randolph County, West Virginia. *Herpetologica* 1(3):113-116.
- 1941. Amphibians and reptiles of the Huntington region. *Marshall Rev.* 4(2):33-40.
- 1964. The amphibians and reptiles of West Virginia. Their identification and distribution. *Marshall University, Huntington, West Virginia.* 47 p.
- , and P. Brant, Jr. 1966. Salamanders found in West Virginia caves. *Proc. West Virginia Acad. Sci.* 38:42-45.
- , and B. Dowler. 1966. Amphibians and reptiles of the Little Kanawha River Basin. *Proc. West Virginia Acad. Sci.* 38:50-57.
- Grimmer, J., and D. A. Langebartel. 1948. *Eurycea longicauda melanopleura* in Illinois. *Herpetologica* 4:224.
- Hassler, William G. 1932. New locality records for two salamanders and a snake in Cattaraugus Co., New York. *Copeia* 1932(2):94-96.
- Heilman, R. A. 1951. A list of the amphibians and reptiles of Lebanon County, Pennsylvania. *Proc. Pennsylvania Acad. Sci.* 25:44-46.
- Hilton, William A. 1953. The choiroid plexus of the lateral and third ventricles of tailed amphibia. *J. Comp. Neurol.* 99:545-559.
- Holman, J. Alan. 1960. Physiographic provinces and distribution of some reptiles and amphibians in Johnson County, Indiana. *Copeia* 1960(1): 56-58.
- Holbrook, John Edwards. 1838. North American herpetology. Vol. I. J. Dobson and Son, Philadelphia. vi + 120 p.
- Houghton, H. S. 1903. Muscular and skeletal elements in *Spelerpes longicaudus*. *Ohio Natur.* 3(5):379-393.
- Huheey, James E. 1965. Herpetological records from the Great Smoky Mountains. *Herpetologica* 21(4):148-150.
- , and R. A. Brandon. 1960. Caves and cave salamanders of the Great Smoky Mountains National Park. *Proc. Cave Res. Assoc.* 1(1):7-10.
- , and A. Stupka. 1967. Amphibians and reptiles of Great

- Smoky Mountains National Park. Univ. Tennessee Press, Knoxville. xii + 98 p.
- Hurter, Julius. 1911. Herpetology of Missouri. Trans. St. Louis Acad. Sci. 20:59-274.
- Hutchison, Victor H. 1956. Notes on the plethodontid salamanders, *Eurycea lucifuga* (Rafinesque) and *Eurycea longicauda longicauda* (Green). Occas. Pap. Nat. Speleol. Soc. (3):1-24.
- 1958. The distribution and ecology of the cave salamander, *Eurycea lucifuga*. Ecol. Monogr. 28(1):1-20.
- 1961. Critical thermal maxima in salamanders. Physiol. Zool. 34(2):92-125.
- Ireland, Patrick H. 1971. Systematics, reproduction, and demography of the salamander *Eurycea multiplicata*. Ph.D. Thesis, Univ. of Arkansas, Fayetteville, Arkansas. 127 p.
- 1974. Reproduction and larval development of the dark-sided salamander, *Eurycea longicauda melanopleura* (Green). Herpetologica 30(4):338-343.
- Klimstra, Willard D., and M. A. Hutchison. 1965. A collection of amphibians and reptiles in southern Illinois. Trans. Illinois State Acad. Sci. 58:151-156.
- Knight, E. L. 1972. Salamanders in a Mississippi cave. Bull. Maryland Herpetol. Soc. 8(4):88.
- Ladd, D. E. 1947. Size of adult *Eurycea l. longicauda* (Green). Herpetologica 4(1):2.
- Maldonado-Koerdell, M. 1951. Notas anfibiologicas, IV. Urodelos de la coleccion de anfibios y reptiles de la Universidad de Ottawa, Kansas, EE. UU. Rev. Soc. Mexicana Hist. Natur. 11(950):217-222.
- Martof, Bernard S. 1955. Observations on the life history and ecology of the amphibians of the Athens area, Georgia. Copeia 1955(3):166-170.
- 1956. Amphibians and reptiles of Georgia. Univ. Georgia Press, Athens, Georgia. viii + 94 p.
- , and R. L. Humphries. 1955. Observations on some amphibians from Georgia. Copeia 1955(3):245-248.
- , and F. L. Rose. 1962. The comparative osteology of the anterior cranial elements of the salamanders *Gyrinophilus* and *Pseudotriton*. Copeia 1962(4):727-732.
- Miller, G. M. 1964. A record length long-tailed salamander, *Eurycea longicauda longicauda* (Green). J. Ohio Herpetol. Soc. 4:106.
- Minton, Sherman A., Jr. 1972. Amphibians and reptiles of Indiana. Indiana Acad. Sci. Monog. (3):v + 346.
- Mittleman, Myron B. 1942. A new long-tailed *Eurycea* from Indiana, and notes on the *longicauda* complex. Proc. New England Zool. Club 21:101-105.
- 1950. Miscellaneous notes on some amphibians and reptiles from the southeastern United States. Herpetologica 6(1):20-24.
- Mohr, Charles E. 1943. The eggs of the long tailed salamander, *Eurycea longicauda* (Green). Proc. Pennsylvania Acad. Sci. 17:86.
- 1944. A remarkable salamander migration. Ibid. 18:51-54.
- Mount, Robert H. 1975. The reptiles and amphibians of Alabama. Auburn Univ. Agric. Exp. Station. vii + 347 p.
- Muchmore, W. B. 1955. Notes on some salamanders of Warner's Hollow, Astabula County, Ohio. Ohio J. Sci. 55(5):267-270.
- Myers, Charles W. 1958a. Amphibians and reptiles of Washington State Park, Washington County, Missouri. Trans. Kansas Acad. Sci. 60(3):288-293.
- 1958b. Amphibia in Missouri caves. Herpetologica 14(1):35-36.
- Nickerson, Mat A. 1972. Geographic distribution: *Eurycea longicauda melanopleura*. Herpetol. Rev. 4(5):170.
- , and R. Krager. 1973. Additional noteworthy records of Missouri amphibians and reptiles with a possible addition to the herpetofauna. Trans. Kansas Acad. Sci. 38:42-45.
- Nitecki, C. 1965. The carotid labyrinth in some Plethodontidae. Bull. Acad. Pol. Sci. Ser. Sci. Biol. 13:403-407.
- Olmo, E., and A. Morescalchi. 1975. Evolution of the genome and cell sizes in salamanders. Experientia 31(7):804-806.
- Peters, James A. 1946. Records of certain North American salamanders. Copeia 1946(2):106.
- Reed, Clyde F. 1956. The herpetofauna of Harford County, Maryland. J. Washington Acad. Sci. 46:58-60.
- Rossman, Douglas A. 1960. Herpetofaunal survey of the Pine Hills area of southern Illinois. Quart. J. Florida Acad. Sci. 22(3):207-225.
- Rubenstein, Norton M. 1969. A study of the salamanders of Mount Cheaha, Cleburne County, Alabama. J. Herpetol. 3(1-2):33-47.
- Schlauch, F. C. 1972. Notes on a long-tailed salamander from Somerset County, New Jersey. Engelhardtia 3(1):5-6.
- Schmidt, Karl P. 1953. A check list of North American amphibians and reptiles. Sixth edition. Amer. Soc. Ichthyol. Herpetol. viii + 280 p.
- Sealander, J. A., and B. W. West. 1969. Critical thermal maxima of some Arkansas salamanders in relation to thermal acclimation. Herpetologica 25(2):122-124.
- Seibert, Henri C., and R. A. Brandon. 1960. The salamanders of southeastern Ohio. Ohio J. Sci. 60:291-303.
- Sinclair, R. M. 1950. Notes on some salamanders from Tennessee. Herpetologica 6(2):49-51.
- 1951. Notes on recently transformed larvae of the salamander *Eurycea longicauda guttolineata*. Herpetologica 7(1):68.
- Smith, C. C. 1964. The problem of hybridization of the red cave salamander, *Eurycea lucifuga* (Raf.) and the long-tailed salamander *Eurycea longicauda melanopleura* (Green). Arkansas Acad. Sci. Proc. 18:59-61.
- Smith, Philip W. 1961. The amphibians and reptiles of Illinois. Illinois Natur. Hist. Surv. Bull. 28(1):1-298.
- , and J. C. List. 1955. Notes on Mississippi amphibians and reptiles. Amer. Midland Natur. 53(1):115-125.
- , and S. A. Minton. 1958. A distributional summary of the herpetofauna of Indiana and Illinois. Amer. Midland Natur. 58:341-351.
- Stein, H. A. 1954. Additional records of amphibians and reptiles in southern Illinois. Amer. Midl. Natur. 51(1):311-312.
- Stejneger, Leonhard, and Thomas Barbour. 1917. A check list of North American amphibians and reptiles. Harvard Univ. Press, Cambridge. iv + 125.
- Thireau, M. 1975. L'allometrie ponderale encephalosomatique chez les urodeles. II. Relations interspecificques. Bull. Mus. Nat. Hist. Natur. (297):483-501.
- Tinkle, Donald W. 1952. Notes on the salamander, *Eurycea longicauda guttolineata* in Florida. Field and Lab. 29(3):105-108.
- Tschudi, J. J. 1838. Classification der Batrachier, mit Berücksichtigung der fossilen Thiere deiser Abteilung der Reptilien. (A preprint, later appearing in) Mem. Soc. Sci. Natur. Neuchatel, 1839 (1840):1-99.
- Valentine, B. D. 1962. Intergrading populations and distribution of the salamander *Eurycea longicauda* in the Gulf States. J. Ohio Herpetol. Soc. 3(3):42-51.
- Wake, David B. 1966. Comparative osteology and evolution of the lungless salamanders, family Plethodontidae. Mem. S. California Acad. Sci. 4:1-111.
- Welsh, F. J. 1962. A Pennsylvania county record for *Eurycea l. longicauda*. Bull. Philadelphia Herpetol. Soc. 10(1):14.
- Williams, A. A., J. Martin, and R. A. Brandon. 1976. Sperm associations in the male reproductive tract of *Eurycea longicauda* (Amphibia: Caudata). J. Reprod. Fert. 48(2):409-411.
- Wonderly, D. E. 1963. A comparative study of the gross anatomy of the digestive system of some North American salamanders. J. Ohio Herpetol. Soc. 4:31-48.
- Wood, John T. 1947. Notes on North Carolina salamanders. Copeia 1947(4):273-274.

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