

REPTILIA: SERPENTES: COLUBRIDAE

CARPHOPHIS VERMIS

Catalogue of American Amphibians and Reptiles.

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***Carphophis vermis* (Kennicott)**
Western Wormsnake

Celuta vermis Kennicott 1859:99. Type locality, "Missouri" (Cooper County, from United States National Museum [USNM] catalogue). Holotype, USNM 2180, collected by Dr. P.R. Hoy, missing since before 1958.

Carphophiops vermis: Cope 1875:34.

Carphophis amoena, var. *vermis*: Garman 1884:101.

Carphophis amoena vermis: Blanchard 1924:527.

Carphophis amoenus vermis: Perkins 1949:7.

Carphoris vermis: Smith 1961:288. *Ex errore*.

Carphophis vermis: Clark 1968:110. First use of present combination.

• **CONTENT.** *Carphophis vermis* is monotypic.

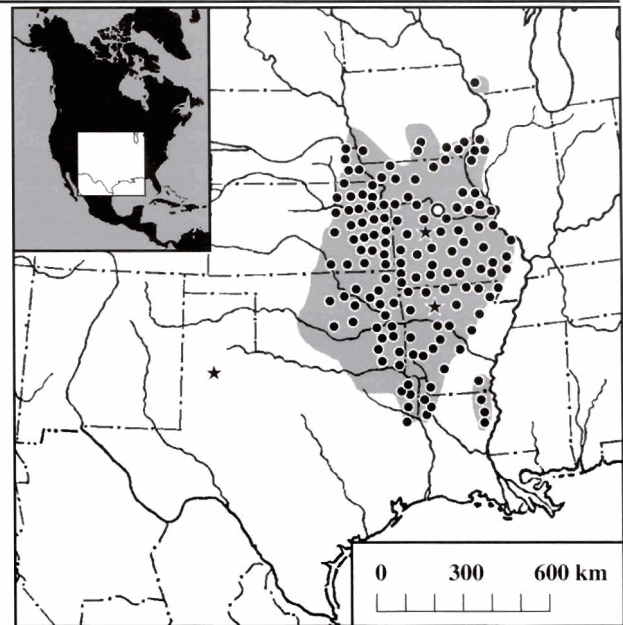
• **DEFINITION.** Adults have total lengths of 17.7–39.1 cm; males are 17.7–35.4 cm long, females are 24.0–39.1 cm. The cylindrical body has a plain dark gray to gray-violet dorsum, and a pinkish venter. The pinkish ventral pigmentation extends upward on the sides to include the third lateral scale row. The head is pointed, and the eyes are small and violet. The short tail ends in a blunt spine-like scale. Dorsal body scales are smooth, pitless, opalescent, and normally occur in 13 rows. On the venter are 120–150 ventral scutes, 21–41 subcaudal scales, and a divided cloacal scute. Each side of the head has 1 nasal, 1 loreal, 0 preoculars, 1 (rarely 2) postocular(s), 1 + 1 (rarely 1 + 2) temporals, 5 supralabials, and 6 infralabials. Dorsally, the paired internasal scales and prefrontal scales are separate (not fused). The chin lacks gular shields between the posterior chin shields.

The single hemipenis is 5–7 subcaudals long when inverted. It has a forked sulcus spermaticus, a calyculate crown, numerous small spines on the shaft, and three large basal spines. The dentition is as follows: dentary teeth, 16–23 (mean 18.5); maxillary teeth, 10–12 (mean 11); palatine teeth, 12–15 (mean 13); and pterygoid teeth, 16–19 (mean 18).

Males have 120–141 (mean 131) ventrals, 25–41 (mean 28) subcaudals, and tails that are 17–23% (mean 20%) of SVL; females have 128–150 (mean 140) ventrals, 21–31 (mean 28) subcaudals, and tails 12–17% (mean 14%) of SVL (Clark 1967, 1970b). Males also have ridges on the body scales above the anal vent (Blanchard 1924).

• **DESCRIPTIONS.** **General descriptions** are in Garman (1892), Cope (1900), Hurter (1911), Bailey (1939), Conant and Bridges (1939), Hudson (1942), H. Smith (1956), Wright and Wright (1957), P. Smith (1961), Anderson (1965), Clark (1968, 1970a), Cochran and Goin (1970), Webb (1970), Behler and King (1979), Vogt (1981), Smith and Brodie (1982), Dundee and Rossman (1989), Ernst and Barbour (1989), Collins (1993), Conant and Collins (1998), T. Johnson (2000), Tennant and Bartlett (2000), and Ernst and Ernst (2003). Detailed descriptions are as follows: **skull** (Clark 1970a), **dentition** (Clark 1970a), **eye diameter** (Clark 1970a), **ear** (Baird 1960), **hemipenis** (Clark 1970a) and **sexual dimorphism** (Clark, 1967, 1970a).

• **ILLUSTRATIONS.** **Color illustrations of adults** are in Behler and King (1979), Simon (1979), Vogt (1981), Smith and Brodie (1982), Tennant (1984, 1998), Dundee and Rossman (1989), Sievert and Sievert (1989), Christiansen and Bailey



MAP. Distribution of *Carphophis vermis*: circle marks the type locality, dots indicate other selected localities, and stars indicate fossil localities.



FIGURE. *Carphophis vermis*, Franklin County, Kansas (photograph by Suzanne L. Collins, courtesy of the Center for North American Herpetology).

(1990), Collins (1993), Conant and Collins (1998), T. Johnson (2000), Tennant and Bartlett (2000), Werler and Dixon (2000) and Ernst and Ernst (2003). **Black and white illustrations of adults or juveniles** are in Conant and Bridges (1939), Hudson (1942), H. Smith (1956), Wright and Wright (1957), Anderson (1965), Clark (1970a), Ernst and Barbour (1989), and Collins (1993). Specific illustrations are as follows: **venter** (Cope 1900, Dundee and Rossman 1989), **skull** (Clark 1970a), **dentition** (Clark 1970a), **maxilla with attached egg tooth** (Clark 1970a), **hemipenis** (Clark 1970a), **head scales** (Cope 1900; Schmidt and Davis 1941; Wright and Wright 1957; Clark 1968, 1970a; Ernst and Barbour 1989; Conant and Collins 1998), **body scales** (Cope 1900), **eggs** (Clark 1970a, Dloogatch 1978, T. Johnson 2000), **hatching neonate** (Clark 1970a, Dloogatch 1978, T. Johnson 2000), and **habitat** (Clark 1970a).

• **DISTRIBUTION.** *Carphophis vermis* is found from southern Iowa and southeastern Nebraska south to northwestern Louisiana and northeastern Texas. Isolated populations are found in southwestern Wisconsin, westcentral Illinois, southeastern Arkansas, and northeastern Louisiana. **Distributional papers** include those of Taylor (1935), Dellinger and Black (1938), Bailey (1939), Klimstra (1950), Breukelman and Clarke (1951),

Parker (1947), Clarke (1956), Dowling (1957), Myers (1957, 1959), Clarke et al. (1958), Sajdak (1978), Thurow (1980, 1999), Tumlison and Wiley (1980), Collins (1995), Corn and Peterson (1996), and Smith and Johnson (1999). **Distributional maps** were presented by Hudson (1942), H. Smith (1956), Wright and Wright (1957), P. Smith (1961), Anderson (1965), Raun (1965), Clark (1968, 1970a), Webb (1970), Behler and King (1979), Simon (1979), Vogt (1981), Smith and Brodie (1982), Tennant (1984, 1998), Dundee and Rossman (1989), Ernst and Barbour (1989), Sievert and Sievert (1989), Christiansen and Bailey (1990), Collins (1993), Conant and Collins (1998), Dixon (2000), T. Johnson (2000), Tennant and Bartlett (2000), Werler and Dixon (2000), and Ernst and Ernst (2003).

• **FOSSIL RECORD.** Pleistocene (Rancholabrean) fossils of *C. vermis* have been found in the Conard Fissure Local Fauna, Newton County, Arkansas (Dowling 1958a); Boney Spring Fauna, Benton County, Missouri (Saunders 1977); and at the Lubbock Lake Site, Lubbock County, Texas (E. Johnson 1974, 1987). The Lubbock Lake, Texas, site is well west of the current range of the species in Texas.

• **PERTINENT LITERATURE.** The most comprehensive report on *C. vermis* is that of Clark (1970a). Other general accounts are in Hurter (1911), Conant and Bridges (1939), Ditmars (1939), Schmidt and Davis (1941), Hudson (1942), H. Smith (1956), Wright and Wright (1957), P. Smith (1961), Anderson (1965), Webb (1970), Behler and King (1979), Vogt (1981), Tennant (1984, 1998), Dundee and Rossman (1989), Ernst and Barbour (1989), Collins (1993), Conant and Collins (1998), T. Johnson (2000), Werler and Dixon (2000), and Ernst and Ernst (2003). Specific topics are: **systematics and taxonomy** (Clark 1968; Rossman 1973; Dowling et al. 1983; Cadle 1984, 1988; Collins 1991a, 1991b; Crother 2000), **zoogeography** (Dowling 1958b), **ear** (Baird 1960), **parathyroid gland** (Herdson 1956), **skin** (Woods 1973), **reproduction** (Clark 1970b, Aldridge and Metter 1973, Fitch 1985, Iverson 1987, Dloogatch 1978, St. Girons 1985, Shine and Seigel 1996), **growth and longevity** (Andrews 1982, Fitch 1999), **habitat** (Burt 1927, Brumwell 1951, Dowling 1958b, Fitch 1958, Elick and Sealander 1972, Elick et al. 1980, Clawson and Baskett 1982, Busby and Parmelee 1996, Corn and Peterson 1996), **resource partitioning** (Henderson 1974), **moisture requirements** (Clark 1967), **evaporative water loss** (Elick and Sealander 1972, Mautz 1982), **thermal ecology** (Fitch 1956, Clarke 1958, Clark 1967, Brattstrom 1965, Henderson 1974, Elick et al. 1980, Avery 1982), **seasonal activity** (Clarke 1958), **hibernation** (Drda 1968), **populations** (Clarke 1958; Fitch 1992, 1993; Busby and Parmelee 1996), **conservation status** (Christiansen 1981, Corn and Peterson 1996), **movements** (Fitch 1958), **parasites** (Wacha and Christiansen (1974), **predators** (Reynolds 1945, Sandidge 1955), **death feigning** (Wright 1986), **bibliography** (Dixon 2000), and **common names** (Collins 1990, Crother 2000, Collins and Taggart 2002).

• **ETYMOLOGY.** The specific epithet *vermis* is Latin for worm, in reference to this snake's similarity to an earthworm.

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