REPTILIA: SQUAMATA: SAURIA: TETIIDAE

Catalogue of American Amphibians and Reptiles.


**Cnemidophorus sexlineatus** (Linnaeus)  
Six-lined Racerunner

*Lacerta sexlineata* Linnaeus, 1766:364. Type-locality, “Carolina”, restricted to Charleston, Charleston County, South Carolina, by Smith and Taylor (1950b). Holotype lost (see Maslin and Secoy, 1986), collected by A. Garden, date of collection unknown.


*Septo sexlineata* Cuvier, 1817 (1816):29.

*Teius lemmiscatus* Merrem, 1820:60 (part).

*Lacerta sexlineata*: M’Murtrie, 1834:27.

*Cnemidophorus sexlineatus* Dumeril and Bibron, 1839:131. First use of combination.

*Aspidoscelis sexlineatus*: Fitzinger, 1843:20.

*Cnemidophorus sexlineatus* Baird, 1839:38. Emendation.

*Cnemidophorus sexlineatus* var. *gularis* Cope, 1866 (1867):303 (part).


*Cnemidophorus sexlineatus* sexlineatus: Cope, 1898 (1900):598.

*Cnemidophorus sexlineatus* Claiborn, 1899:2. *Lapsus*.


**Definitions.** Three subspecies are recognized: *sexlineatus*, *stephanos*, and *viridis*.

**Illustrations.** Black and white photographs of the various subspecies are numerous and include the following: *sexlineatus*...

**Distribution.** *Cnemidophorus sexlineatus* ranges from Maryland to the Florida Keys in the eastern United States, from the upper Mississippi River region (southeastern Minnesota and adjacent Wisconsin) in the north to extreme southern Texas in the south, and from southern South Dakota and southeastern Wyoming through eastern Colorado to eastern New Mexico in the west. The eastern race (*sexlineatus*) occurs in the eastern United States, east of the Mississippi River and south of the Ohio River at their confluence. The western race (*viridis*) occurs in Illinois, northern and southern Indiana, and Wisconsin as well as areas west of the Mississippi River. A broad zone of intergradation exists between *sexlineatus* and *viridis* in the south-central United States (see Map). Burt (1931a), Conant (1958,
Figure 2. Dorsal pattern in *Cnemidophorus sexlineatus*. *C. s. viridis*: A - (male, Bourbon Co., Kansas); B - (male, Baxter Co., Arkansas). *C. s. stephensae*: C - (male, Kenedy Co., Texas). *C. s. sexlineatus*: D - (male, Wake Co., North Carolina); E - (female, Lancaster Co., South Carolina). *C. s. sexlineatus x viridis*: F - (male, Cameron Parish, Louisiana). Line = 10 mm. Photographs from Trauth (1980).

Figure 3. Dorsal head scutellation of *Cnemidophorus sexlineatus*. A. *C. s. viridis* (USD 3581), Knox Co., Nebraska. B. *C. s. sexlineatus* (USNM 22178), St. Mary's Co., Maryland. C. *C. s. sexlineatus* (AMNH 64548), Highlands Co., Florida.

*Cnemidophorus sexlineatus* inhabits areas with dry, friable soils comprised mostly of sand, sandy-loam or red clay substrates in which they seek shelter via burrowing; these habitats include sandy areas along and within river floodplains, sand dunes, cedar glades, and rock outcrops. Racerunners are also common in a variety of physically or floristically-altered environments such as along highway and railroad right-of-ways, beneath power lines, the borders of cultivated fields or pastures, and open canopy areas within pine and oak-hickory forests.

**Fossil Record.** *Cnemidophorus sexlineatus* has been reported from the Pleistocene of Arkansas (Davis, 1973), Florida (Auffenberg, 1956; Gut and Ray, 1963; Martin, 1974), Kansas (Etheridge, 1958, 1960; Holman, 1971, 1979; Rickart, 1976), Texas (Holman, 1966, 1969; Rogers, 1976), and Missouri (Holman, 1974).

**Pertinent Literature.** Comprehensive works on the biology of *Cnemidophorus sexlineatus* include Burt (1931a), Fitch (1958), and Trauth (1980). Taxonomic and systematic discussions are found in Burt (1931a), Cope (1892), Duellman and Zweifel (1962), Gadow (1903), Trauth (1980), and Wright (1975), Conant and Collins (1991), Smith (1946), Trauth (1980), Vance (1978), and Wright (1994) summarized the distribution in the United States.
Chromosomes were examined by Bickham et al. (1976), Cole (1984), Dessauer and Cole (1984), Lowe and Wright (1966), and Lowe et al. (1970). Electrophoretic patterns and biochemical genetics are discussed in Dessauer and Cole (1984, 1989). Dessauer et al. (1962), Guttman (1971), McKinney et al. (1973), Neaves (1969), Parker and Selander (1976), and Wright et al. (1983). Mitochondrial DNA analyses are detailed in the works of Densmore et al. (1989a, b) and Moritz et al. (1992). Parker (1979) provided detailed morphometric analyses within a phylogenetic framework.


**Nomenclatural History.** As with many other members of "Cope’s most difficult genus" (Lowe, 1993), the taxonomic history of *Cnemidophorus sexlineatus* is replete with misapplied names. The early synonyms were generated prior to the general acceptance of Darwin’s work placing biological species within a phylogenetic framework, and largely resulted from differing interpretations of systematic classification at levels above the species category. *Cnemidophorus sexlineatus* became taxonomically intertwined with *C. gularis* and *C. perplexis* following...
the description of the latter two taxa by Baird and Girard in 1852. Cope (1866 [1867]) considered gularis and sexlineatus to be conspecific, an arrangement followed by most other workers (e.g., Bocourt, 1874; Bou勒enger, 1885; Cope, 1875, 1883, 1898 [1900]). Coues, 1875; Günther, 1885; Strecker, 1902, 1909, 1922; Yarow, 1875, 1882 [1883]; but not Cope, 1892) for almost a century. Cope (1892, 1898 [1900]) considered perplexus a subspecies of tessellatus (= tigris Burger, 1950), but Brown (1903) and Smith and Taylor (1906) suggested a close relationship between sexlineatus and perplexus. Burt (1931a, b) recognized distinct character differences between sexlineatus and gularis, but remained unconvinced of the distinctness of the two taxa and stated that both sexlineatus and perplexus possessed close affinities with gularis. He codified this view by treating the three as subspecies of C. sexlineatus in his classic treatise on the genus Cnemidophorus. Although some workers (e.g., Gadow, 1906; Strecker, 1930) recognized the fact, it remained for Taylor (1936) to explicitly make clear the distinction between sexlineatus and gularis. Schmidt and Smith (1944) recognized that gularis was distinct from perplexus, and Wright (1969) has detailed the confusing misapplications of the latter name. Only with the advent of sophisticated univariate and multivariate statistical analyses of character variation in large numbers of specimens from throughout the ranges of various taxa and the application of molecular genetic techniques to systematic problems in the genus Cnemidophorus have the taxonomic relationships between gularis, perplexus, and sexlineatus been solidly established.

• Etymology. The name sexlineatus (L. “sex” = six or six-fold; L., “lineatus” = streaked or marked with lines) refers to the number of longitudinal stripes running the length of the body. The name viridis (L. “viridis” = green) alludes to the characteristic body color of this subspecies. The matronym Stephensiae honors Hazel J. Stephens Hickey for her financial support toward the herpetological endeavors of the senior author.

• Comment. Trauth (1980) noted the distinctiveness of populations of C. sexlineatus in Florida and Texas, and recently (Trauth, 1992) designated a new race from Texas (see below). The diagnostic traits for the new Texas race were not applicable to the undescribed Florida race. This latter form possesses extremely high scale counts for several characters (e.g., Figure 3C) and is generally restricted to central peninsular Florida and several coastal scrub habitats. Zones of intergradation between the new forms and the other races remain to be established. Trauth (1980) postulated that Florida was the evolutionary center (storehouse of genetic variation) for the species because of the range of variation of several character states in Florida.

1. Cnemidophorus sexlineatus sexlineatus (Linnaeus)
Six-lined Racerunner


• Definition. This subspecies is characterized by six well-defined longitudinal light stripes. An additional vertebral stripe may be present, and it may be single, thinly-divided, or separated into two or more weakly-defined stripes. The latter condition results from expansion and separation of the vertebral stripe and occurs mostly in southeastern populations. The vertebral stripe is broad in sexlineatus x viridis intergrades. The ground color is dark brown or black. The face and neck are blue. Lateral supraocular granules average 28 (12-62), circumorbital granules average 11 (4-29), and granules from occiput to rump average 218 (182-267).

• Remarks. Hoffman (1944, 1949) reported on the phenotypic variation in sexlineatus in the eastern United States and noted subdivision of parietal counts; later, Hoffman (1957a, b) named a new subspecies, pauciporus (= oligopus), characterized by high parietal counts and reduced femoral pore number (mostly less than 30). The range of pauciporus was given as Maryland, Virginia, North Carolina, and northern South Carolina. Duellman and Zweifel (1962) noted that scales other than the parietals (e.g. frontoparietals and supraocclusals) are often subdivided in sexlineatus and, by showing that femoral pore counts in sexlineatus elsewhere in its range were below 30, refuted the recognition of pauciporus. Trauth (1980) showed that supernumerary frontoparietals occurred in Alabama, Georgia, and Florida populations.

2. Cnemidophorus sexlineatus viridis Lowe
Prairie Racerunner

Cnemidophorus sexlineatus viridis Lowe, 1966:44. Type-locality: “7.6 mi. S Tucumcari, along state rd 18, Quay County, New Mexico.” Holotype, University of Arizona, Department of Zoology (UAZ) 14800, an adult female, collected by C.H. Lowe on 12 August 1949 (not examined by authors).

• Definition. This subspecies possesses six well-defined longitudinal stripes and an additional vertebral stripe that is single or narrowly divided. The vertebral stripe is broad in sexlineatus x viridis intergrades. The ground color is mostly green. The face and neck are bluish-green. Lateral supraocular granules average 21 (5-36), circumorbital granules average 9 (1-12), and granules from occiput to rump average 192 (155-240).

• Remarks. Trauth (1980) examined geographic variation in morphological characters of C. sexlineatus from throughout its range. He found that this subspecies exhibits a broad contact zone with that of the eastern form (see Map). Intergarde populations possess an array of intermediate meristic counts as well as body coloration and striping patterns. Trauth (1980) also noted that 15 of 18 characters examined varied clinaly. Clines were usually oriented in a northwest to southeasterly direction with meristic counts concordant from smaller to larger, respectively.

3. Cnemidophorus sexlineatus stephensi Trauth
Texas Yellow-faced Racerunner


• Description. This subspecies is characterized by the following combination of features: small adult body size (maximum SVL 68 mm), absence of a vertebral stripe (a vestige may be present in the region of the nape or on the anterior vertebral field in some specimens), and yellow coloration on the face and lateral surfaces of the neck in both adults and juveniles.
• Remarks. The range of this subspecies as illustrated by Trauth (1992) is generally restricted to the South Texas Plains, a mostly mesquite-live oak savanna characterized by moderately tall, white-to-brown colored sand dunes in the eastern portion to a region of low red-clay sand dunes in the western portion (Mahler, 1981). Trauth (1992) also found this subspecies on South Padre Island.

Literature Cited

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