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WRIGHT, JOHN W. 1971. *Cnemidophorus neomexicanus.*

Cnemidophorus neomexicanus Lowe and Zweifel New Mexico whiptail lizard

Cnemidophorus neomexicanus Lowe and Zweifel, 1952:230. Type-locality, "McDonald Ranch Headquarters, 4800 feet elevation, 8.7 miles west and 22.8 miles south of New Bingham Post Office, Socorro County, New Mexico." Holotype, Mus. Vert. Zool. (Univ. California, Berkeley) 55807, a female, collected by Charles H. Lowe, Jr. on 2 August 1947. See Nomenclatural History.

Cnemidophorus perplexus: Maslin, Beidleman and Lowe, 1958: 344 (placed *C. neomexicanus* in the synonymy of *C. perplexus* Baird and Girard).

• CONTENT. No subspecies have been proposed.

• DEFINITION AND DIAGNOSIS. This is a small, all-female species of *Cnemidophorus* that attains a maximum snout-vent length of 78 mm. Means and ranges for selected meristic characters (as defined by Wright and Lowe, 1967) are: circumorbital scales 19.6 (14–25); interlabial scales 26.0 (17–31); scales around midbody 76.2 (71–83); scales between paravertebral light stripes 11.4 (9–14); femoral pores 38.0 (34–42); fourth toe lamellae 31.4 (30–34); and light spots in upper lateral dark fields 32.7 (28–38).

The color pattern consists of seven light stripes on a dark background, with the middorsal stripe wavy or zigzag and bifurcate in the occipital region. Diffuse light spots are present in the dorsolateral and upper lateral dark fields. No significant ontogenetic change in color pattern is present. Life colors are as follows: dorsal surface of head, gray-green; chin, blue-green; dorsal dark fields, black to gray; light stripes, white to yellow; venter, immaculate with light blue tinge; tail, blue-green to gray-green; spots, grayish-white to yellowish-white.

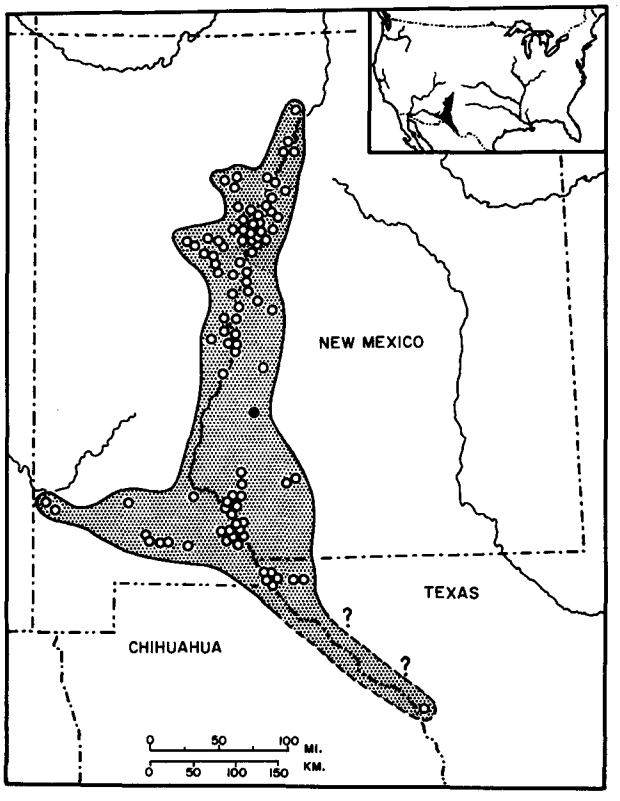
This species can be distinguished from all other species of *Cnemidophorus* by the following set of characters: circumorbital scale series frequently complete; postantebrachial and mesoptychial scales granular; middorsal stripe wavy and bifurcate; tail blue-green.

• DESCRIPTIONS. A thorough description of the type-series was presented by Lowe and Zweifel (1952). Variation in scutellation, color, and pattern were discussed by Maslin, Beidleman and Lowe (1958), Duellman and Zweifel (1962), Taylor and Medica (1966), Axtell (1966), and Wright and Lowe (1967). Stebbins (1954, 1966) presented brief descriptions of color, pattern, and scutellation. Lowe and Wright (1966a, 1966b) and Lowe, Wright, Cole, and Bezy (1970) described the karyotype (allodiploid, $2n = 46$).

• ILLUSTRATIONS. Black and white photographs are available in Lowe and Zweifel (1952:239, dorsal view of holotype), Forbes (1961:221, dorsal view of specimen with bifurcate tail), Duellman and Zweifel (1962:plate 27, dorsal view), and Wright and Lowe (1967:7, dorsal view). Stebbins (1954:293, 1966: plate 27) presented drawings of a specimen from Socorro County, New Mexico. Line drawings illustrating the circumorbital scale series were presented by Lowe and Zweifel (1952:232), Stebbins (1954:286, 1966:plate 27), Duellman and Zweifel (1962:163), and Wright and Lowe (1967:20). The postantebrachial scales were illustrated by Duellman and Zweifel (1962:164), and the karyotype by Lowe and Wright (1966a:figure 17, 1966b:83, figure 2), and Lowe, Wright, Cole and Bezy (1970:134, figure 3B).

• DISTRIBUTION. *Cnemidophorus neomexicanus* occurs in the valley of the Rio Grande and some adjacent closed basins in New Mexico and extreme western Texas. The major part of its distribution is on sandy soils within the flood plain of the Rio Grande, where periodic flooding maintains perpetually disturbed situations. Outside of the flood plain, it occurs at the edges of playas (in closed basins), along sandy arroyos and washes, and in other open sandy habitats. The activities of man and his animals in disturbing habitats appears to favor expansion of the range of the species. It is not currently known from Mexico, but can be expected in the Rio Grande valley in Chihuahua, and perhaps in some of the closed basins of northwestern Chihuahua.

The following unpublished locality records, arranged from north to south, are plotted on the map (abbreviations used are: ANSP, Academy of Natural Sciences, Philadelphia; LACM, Los Angeles County Museum of Natural History; NMSU, New Mexico State University; UNM, University of New Mexico; USNM, United States National Museum; UTEP, University of Texas, El Paso): NEW MEXICO. *Rio Arriba Co.*: 2.5 mi W and 4.5 mi N Chamita, along Rio Ojo Caliente (UNM); Espanola (USNM). *Sandoval Co.*: 1 mi W San Ysidro (UNM); 5 mi W San Ysidro (UNM); 4 mi S and 2 mi W San Ysidro (UNM); 1.5 mi N and 16.5 mi W Bernalillo (UNM). *Bernalillo Co.*: Albuquerque and vicinity (numerous localities, UNM); Cienega Canyon at Sandia Park, Sandia Mts. (UNM). *Valencia Co.*: Swanee (UNM); 2 mi S and 15 mi W Los Lunas (UNM); 2 mi S and 8.5 mi W Los Lunas (UNM). *Torrence Co.*: 1 mi W Scholle (UNM). *Socorro Co.*: near Escondida Bridge, 3 mi N Socorro (UNM); 1 mi N and 1 mi W San Acacia (UNM); La Joya State Game Refuge (UNM); 6 mi S Bernardo (UNM); 2 mi E San Antonio (UNM). *Doña Ana Co.*: Las Cruces and vicinity (numerous localities, LACM and NMSU); 2 mi S Radium Springs (LACM). *Luna Co.*: 1.4 mi N jct. Hwys. 26 and 180 (UNM); along dry bed of Rio Mimbres near Deming (ANSP); *ca.* 2 mi W Luna-Doña Ana Co. line, along Hwy. 180 (LACM). *Grant Co.*: Lampbright Creek, 0.8 mi N jct. Hwys. 260 and



MAP. Solid circle indicates the type-locality; hollow circles indicate other localities; the shaded area indicates the presumed range based on locality records and physiographic features.

61, on 260 (UNM). TEXAS. *El Paso Co.*: El Paso and vicinity (numerous localities, UTEP).

A record from Presidio County, Texas (Axtell, 1966) requires verification.

• FOSSIL RECORD. A Pleistocene-Recent record from Isleta Cave, Bernalillo County, New Mexico, has been reported by Harris and Findley (1964).

• PERTINENT LITERATURE. The all-female nature of the species was reported by Duellman and Zweifel (1962) and Maslin (1962). Pennock (1965) presented chromosome counts and Lowe and Wright (1966a, 1966b) discussed the alloploid origin and evolution of the species via hybridization, giving evidence from chromosome morphology. Axtell (1966), Lowe and Wright (1966b), Taylor and Medica (1966), Wright and Lowe (1967), and Christiansen and Ladman (1968) discussed various aspects of hybridization with *C. inornatus*. Unverified reports of males have been made by Lowe and Zweifel (1952) and Maslin (1966).

Habitat descriptions were presented by Lowe and Zweifel (1952), Stebbins (1954, 1966), Axtell (1966), Wright and Lowe (1967, 1968), and Medica (1967). Lowe and Zweifel (1952), Duellman and Zweifel (1962), Stebbins (1954, 1966), Axtell (1966), and Wright and Lowe (1967, 1968) discussed geographic distribution and presented range maps. Lawrence (1955) reported the species from the vicinity of El Paso, Texas. Pough (1962) reported localities in southwestern New Mexico, and Wright and Degenhardt (1962) discussed distribution in Sandoval County, New Mexico.

Maslin (1966, 1971) discussed egg hatching success and the sex of hatchlings, and the results of skin grafting experiments with *C. tesselatus* were presented by Maslin (1967). Medica (1967) reported food habits, density, seasonal activity, aspects of reproduction, and body temperatures of a population in southcentral New Mexico. Egg size and reproductive stage in a sample of 11 specimens were reported by Cuellar (1968). Christiansen (1969) described hibernating sites in the vicinity of Albuquerque, New Mexico.

Maslin (1968) discussed *C. neomexicanus* with respect to taxonomic problems in parthenogenetic lizards, and Kerfoot (1969) utilized meristic data on *C. neomexicanus* in a discussion of meristic variables in reptiles. The allodiploid nature of the species was confirmed by identification of phenotypes of alleles of lactate dehydrogenase (Neaves and Gerald, 1968) and adenosine deaminase isozymes (Neaves, 1969). Colborn and Adamo (1969) reported the ultrastructure of sympathetic ganglia, and Ladman (1964) described the cytology of the retina.

• NOMENCLATURAL HISTORY. Both before and since the description of *C. neomexicanus* this species has been associated with the name *C. perplexus* Baird and Girard. The name *perplexus* has also been used, at least in part, for lizards currently allocated to 11 or more other species (Wright, 1969). I have examined specimens reported as *C. perplexus* by earlier workers (e.g., Cope, Yarrow, Gadow, Van Denburgh, Burt), and found that some were *C. neomexicanus*.

Since the description of *C. neomexicanus*, use of the name *C. perplexus* has generally been restricted to this species, with the exception of works by Milstead (1957a, 1957b, 1957c, 1958), where it was used for *C. inornatus*, and references to hybrid individuals (Lowe and Wright, 1966b; Maslin, 1968). Wright and Lowe (1967) demonstrated that the name *C. perplexus* was based on a hybrid (*C. neomexicanus* × *C. inornatus*), and Wright (1969) discussed the nomenclatural status of the form.

• REMARKS. Lowe and Wright (1966a, 1966b) showed that *C. neomexicanus* has one set of chromosomes from *C. tigris* and one from a member of the *sexlineatus* species group (presumably *C. inornatus*). As the various populations of the all-female species *C. tesselatus* also arose through similar interspecies-group hybridization, both species have been placed in the redefined *tesselatus* group by Lowe, Wright, Cole and Bezy (1970).

• ETYMOLOGY. The name *neomexicanus* is a Greek-Latin combination referring to the state of New Mexico.

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JOHN W. WRIGHT, LOS ANGELES COUNTY MUSEUM OF NATURAL HISTORY, LOS ANGELES, CALIFORNIA 90007.

Primary editor for this account, Clarence J. McCoy.

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For information, write: SSAR Catalogue Committee
Genera of Reptiles Project
Department of Herpetology
American Museum of Natural History
New York, N. Y. 10024 USA