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CNEMIDOPHORUS TIGRIS VARIOLOSUS, A REVIVED SUBSPECIES OF WHIPTAIL LIZARD FROM MEXICO

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ABSTRACT. The name *Cnemidophorus variolosus* Cope, 1892, is revived as a subspecific name for populations of the species *Cnemidophorus tigris* inhabiting extreme southern Coahuila and adjacent Durango. This southern form is distinguished from the adjacent (northern) subspecies, *C. t. marmoratus*, by a heavy accumulation of melanic pigment on the venter and also by differences in dorsal pattern. The known geographic distribution of *variolosus* is described, and that of *marmoratus* is revised.

In the region of the Chihuahuan Desert, the species *Cnemidophorus tigris* has been considered to be represented by a single subspecies, *C. t. marmoratus*, found in New Mexico, western Texas, Chihuahua, Coahuila, and eastern Durango. Over much of this broad region the lizards are relatively constant in pigmentation, but at the southern edge of the area, over a latitudinal distance of at least 150 miles, a variant color pattern population occurs that is worthy of taxonomic recognition.

I am grateful to Dr. Robert Inger, Chicago Natural History Museum (abbreviated CNHM in this paper), Dr. Charles Walker and William Duellman, University of Michigan Museum of Zoology (UMMZ), and Dr. Robert C. Stebbins, University of California Museum of Vertebrate Zoology (MVZ), who sent specimens to me on loan or facilitated my study at their respective institutions. Mr. Charles M. Bogert kindly read and criticized the manuscript.

CNEMIDOPHORUS TIGRIS VARIOLOSUS Cope

Cnemidophorus variolosus Cope, 1892: 39, type locality Parras, Coahuila; type specimen U.S.N.M. 3066.

Cnemidophorus tessellatus variolosus, Cope, 1900: 587.

Cnemidophorus melanostethus, Gadow, 1906: 372.

Cnemidophorus tessellatus tessellatus, Burt, 1931: 159.

Cnimidophorus [sic] tigris marmoratus, Smith and Taylor, 1950: 190.

DIAGNOSIS: A subspecies of *Cnemidophorus tigris* characterized by

a dorsal pattern predominately of dark and light reticulations with little or no evidence of longitudinal light lines; black chest and throat; and purplish-gray to black gular region. Most closely related to *C. t. marmoratus* which has a similar dorsal pattern but has the gular region light (white, pinkish or orange in life), usually with dark spots, and the throat and chest with some dark markings but rarely or never predominately black. *Cnemidophorus tigris aethiops* of southern Arizona and Sonora has ventral surfaces similar in color to *variolosus* but the dorsal pattern is striped and spotted, not reticulate.

Discussion: In dealing with with Cope's *variolosus*, Gadow (1906: 372) synonymized it with *C. melanostethus*, which name he used also for lizards in southern Arizona now referred, part at least, to the black-chinned form *C. t aethiops*. Populations of southern Arizona (except the extreme western part) and Sonora are similar to those of southern Coahuila in possessing black or very dark chin, throat and chest, but differ markedly in dorsal pattern—light stripes on a variously spotted or otherwise broken dark background in *aethiops*, reticulations with little or no trace of linearity in *variolosus*. An airline distance of well over 300 miles separates the known ranges of the two forms, and much of the intervening territory is of a sort (for example the Sierra Madre Occidental) where *tigris* would not be found. In his extremely conservative monograph of *Cnemidophorus*, Burt (1931: 159–160) treated *variolosus* as a synonym of *C. tessellatus tessellatus*. At the present time, two species, one with seven subspecies, are recognized among the populations that Burt reserved to the single subspecies. The similarity of dorsal pattern in *marmoratus* and *variolosus* argues for a close relationship, and the most recent workers to treat the forms considered *variolosus* as a synonym of *C. tigris marmoratus* (Smith and Taylor, 1950: 190).

With regard to the characters that distinguish it from *variolosus*, *C. tigris marmoratus* is quite constant over its range. Scales of the chest often have a black anterior edge, but the chest is rarely or never predominantly black. Black spots are often but not invariably present on the pale background of the throat and chin. I have noted in larger individuals of *marmoratus* a pinkish to orange suffusion of the chin, sometimes spreading to the chest, in specimens collected by me at such widely separated localities as Samalayuca, Chihuahua; Boquillas, Coahuila; and Cuatro Cienegas, Coahuila. I presume that the color is characteristic of the subspecies.

In adult *variolosus*, the dorsal pattern is a fine reticulum that usually includes both dorsal and lateral surfaces of the body. Rarely there is some vertical barring at the sides. The side of the body in *marmoratus*

regularly shows vertical bars, and in extreme examples continuous light and dark bars cross the dorsum. Usually, however, the mid-dorsal region is reticulate, sometimes with traces of thin dorso-lateral lines showing through the reticulum.

I have collected *C. t. variolosus* at both the western and eastern limits of the range as it is presently known, as well as from intermediate localities. Throughout this region, the chest is invariably largely black. The individual scales of the chest region usually have an ill-defined light posterior border, but the all-over effect is dark. The throat is similar to the chest in pigmentation. The gular region is dark gray to black in life, and rarely shows a very slight tendency to darker mottling. The discrete, black spots seen in many examples of *marmoratus* are not present. Dark ventral coloration is present in both sexes.

With regard to black coloration, the most extreme individuals examined by me are two collected at 41 miles (by road) north-northwest of Saltillo, Coahuila. A male 89 mm. snout-vent length has the entire chin, throat, and chest jet black. Only at the very posterior end of the abdomen are there a few scales with more light than dark pigment. The top and sides of the head and the distal two-thirds of the tail are black. A female 87 mm. snout-vent length is only slightly less dark, with dark gray rather than black chin, and brown head.

I have seen no hatchlings of *variolosus*, so cannot say whether the black coloration is developed in them. The smallest individual I have examined measures 59 mm. snout-vent length and has the black of the chest well-developed with, however, slightly wider light posterior borders to the scales than is usual in larger specimens.

Scutellation: Thirty-one specimens of *variolosus*, including specimens from all parts of the known range, have an average of 98.5 ± 1.0 scales around mid-body (excluding enlarged ventrals), range 86—109. The same count was made for two samples of *marmoratus;* Twenty-six lizards from central Coahuila in the vicinity of Cuatro Cienegas, Hermanas, and Monclova average 100.2 ± 1.1 (87—110); Fifteen specimens from Alamogordo, Otero County, New Mexico average 102.5 ± 1.8 (91—116). There are no significant differences among the populations in the number of scales around mid-body.

Numbers of femoral pores often vary from population to population in *Cnemidophorus*, but *variolosus* and *marmoratus* do not appear to differ noticeably in this respect. Thirty-one *variolosus* average 45.1 ± 0.7 (40—50); twenty-five *marmoratus* from central Coahuila average 43.6 ± 0.5 (38—48); and fifteen from Alamogordo average 45.3 ± 0.6 (40—48).

Distribution of Cnemidophorus tigris variolosus

The locality records for *variolosus* cluster about a line running almost due east from the vicinity of Lerdo, Durango and Torreón, Coahuila to a few miles north and west of Saltillo, Coahuila (fig. 1). This distribution pattern is in part a consequence of the presence of the highway that connects Torreón with Saltillo, but it appears that to the north of the line at least, *variolosus* is abruptly replaced by *marmoratus*. The evidence for this exists in the distribution of the two forms in the western part of the area in question. Typical *marmoratus* is found at Las Delicias and immediately south of that place (AMNH 67370–74 + 8 untagged specimens; CNHM 46102–05). Approximately 30 miles south-southwest of Las Delicias lies San Pedro de las Colonias. Specimens of *C. t. variolosus* have been taken 12 miles north of San Pedro (CNHM 44298) and 30 miles NE (presumably by road) of San Pedro (CNMH 46100–01). It is evident that the two forms approach each other very closely here, yet the diagnostic characteristic of ventral coloration remains true for each population. Intergradation between the two forms must take place abruptly, if it indeed occurs. The general close similarity of *variolosus* and *marmoratus*, together with the knowledge of similarly abrupt transitions between other presumed subspecies of *Cnemidophorus*, leads me to assume that the relationship is subspecific.

Cnemidophorus tigris variolosus occurs in a variety of desert habitats. In the vicinity of Matamoros, *variolosus* darts among the creosote bushes *(Larrea)* and mesquites *(Prosopis)* on the sand dunes inhabited by *Uma exsul*. Near Paila, the habitat is very rocky desert with a growth of *Yucca*, *Agave*, *Larrea*, and *Fouquieria* predominating.

Locality records (Museum numbers are cited for specimens examined): Durango: 5 km. W. Torreón, Coahuila (CNHM 10778, 10783–92); 5 mi. SW Torreón Coahuila (AMNH 77275–76). Coahuila: 10 mi. E, 6 mi. S Torreón (AMNH 77279); vicinity of Matamoros (AMNH 77258); 7 mi. E. Matamoros (AMNH 77259–63); 3.3 mi. W Zapata (UMMZ 112667–68); 12 mi. N San Pedro (CNHM 44298); 30 mi. NE San Pedro (CNHM 46100–01); 19 mi. W Paila (AMNH 77285); 3.1 mi. W Paila (UMMZ 112666); 16 mi. N, 31 mi. W Parras (AMNH 77252); 12 mi. N, 10 mi. E Parras (Chrapliwy and Fugler, 1955: 126, recorded as *marmoratus*, assigned to *variolosus* on a geographic basis); Parras (Type Locality, Cope, 1892: 39); ½ mi. S San Antonio de Jaral (near Hipólito) (MVZ 24385–86); 41 mi. (by road) NNW Saltillo (AMNH 77288–89).

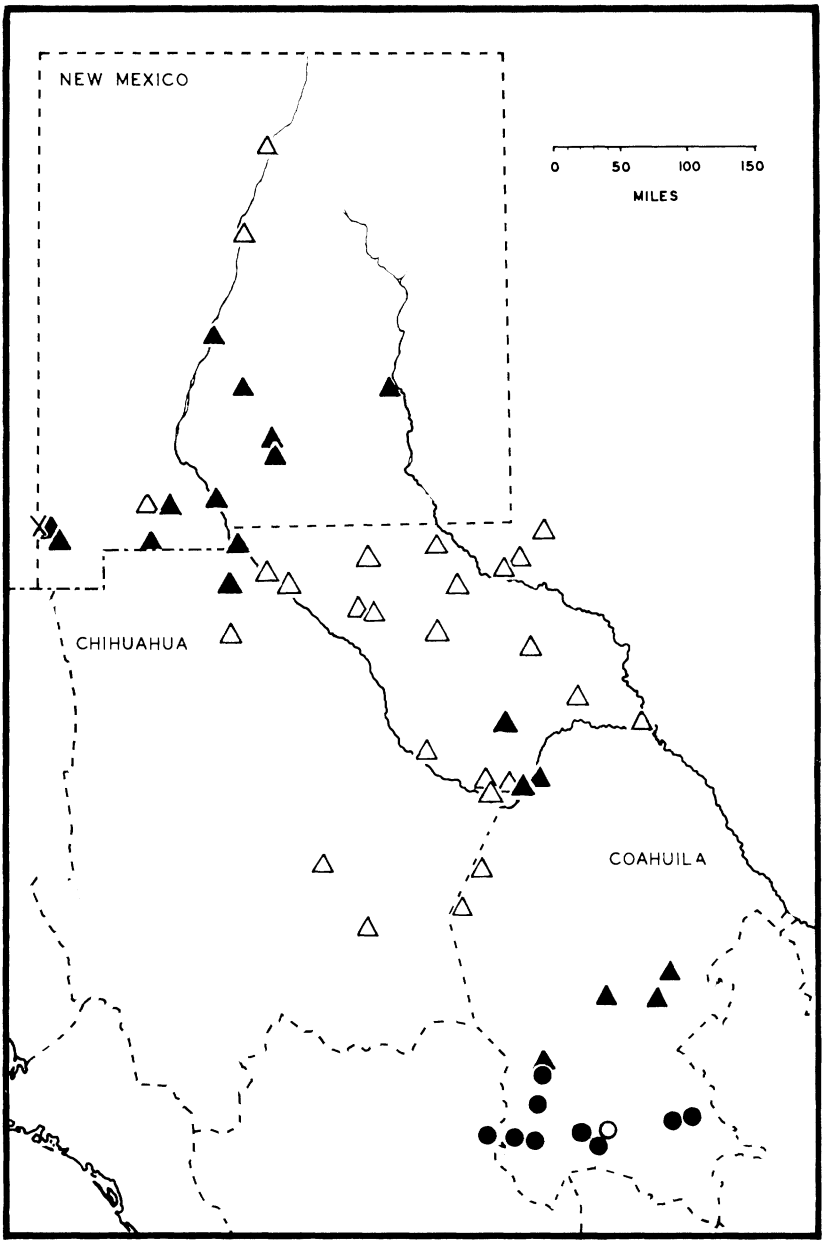

Fig. 1. Distribution of *Cnemidophorus tigris variolosus* (circles) and C. *t. marmoratus* (triangles). Closed symbols indicate localities from which specimens have been examined; open symbols indicate localities from the literature or personal communications. The X in extreme southwestern New Mexico marks two closely approximated localities for C. *tigris aethiops*.

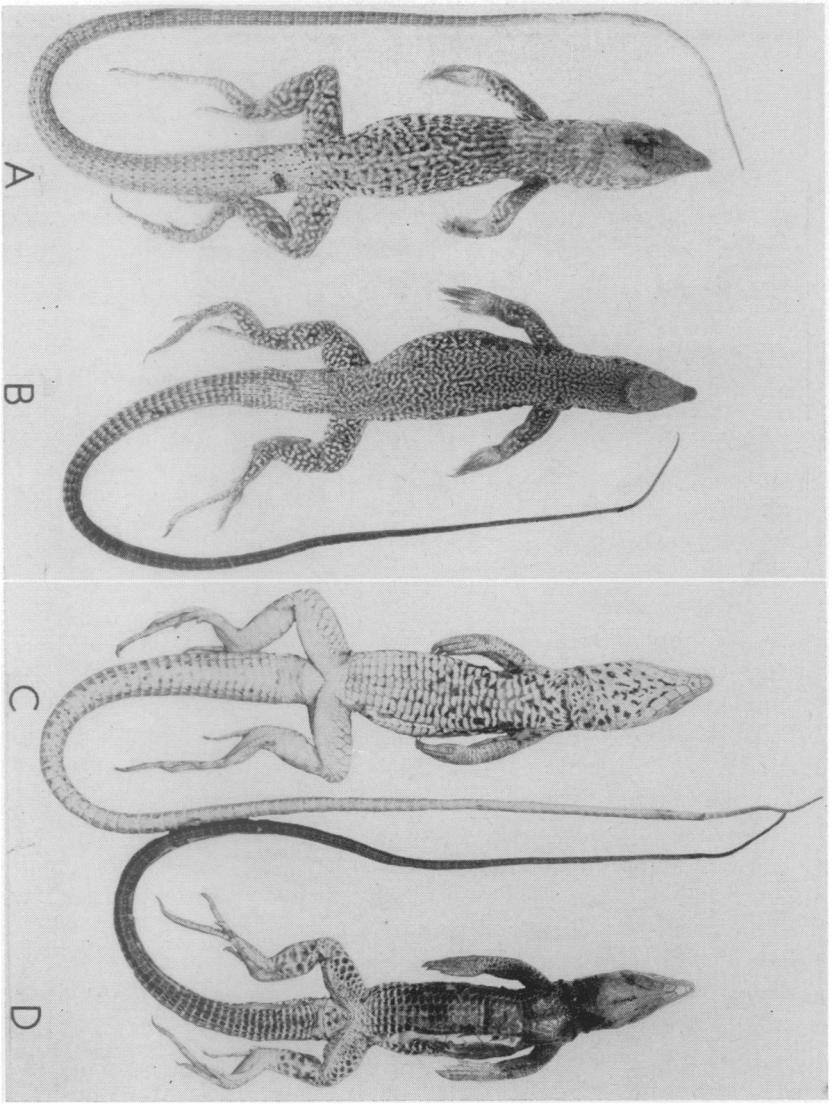

Fig. 2. A. *Cnemidophorus tigris marmoratus*, dorsal surface (AMNH 77320, Boquillas, Coahuila). B. *Cnemidophorus tigris variolosus*, dorsal surface (AMNH 77285, 19 mi. W Paila, Coahuila). C. C. *t. marmoratus*, ventral surface (AMNH 77320). D. C. *t. variolosus*, ventral surface (AMNH 77285). One-half times life size.

Distribution of Cnemidophorus tigris marmoratus

When Burger (1950: 7) revived this subspecies, that part of the range in the United States was given by him as "Southern New Mex-

ico east of the Rio Grande and Trans Pecos Texas . . ." Examination of specimens from southern New Mexico reveals that the Rio Grande does not separate two races of *tigris* in New Mexico, but typical *marmoratus* occurs almost to the western border of the state where it is abruptly replaced by *C. t. aethiops*. The dividing line between the two races seems to be the Peloncillo Mountains which parallel the Arizona-New Mexico border only a few miles to the east of that boundary. Two specimens from Granite Gap, Peloncillo Mountains, Hidalgo County, New Mexico (AMNH 73736–37) are *aethiops;* dorsal striping is distinct and the chin and chest are black. Another individual from San Simon Ciénega, Hidalgo Co. (UMMZ 114167) is also *aethiops*. An individual from 5 miles north of Animas, Hidalgo County (AMNH 73738) and two from 10 miles south of Steins, Hidalgo County (UMMZ 67307–08) are *marmoratus*. The chin is spotted with black in one specimen, immaculate in the others. The chest is spotted with black in two lizards and immaculate in the other. Two specimens (one from each locality) show perhaps slightly more than the usual trace of linearity in the dorsal pattern, suggesting some genic influence from *aethiops*. However, the data are too few and too subjective to be more than suggestive. The presence of the Sonoran Desert form *aethiops* in extreme western New Mexico and its abrupt replacement by the Chihuahuan Desert form *marmoratus* to the east of the Peloncillo Mountains recalls the similarly sharp break between *marmoratus* and *variolosus* in southern Coahuila. The extension of *C. t. aethiops* into western New Mexico parallels the distribution of some other Sonoran Desert species of reptiles discussed by Lowe (1955).

The exact distribution of *C. t. marmoratus* in New Mexico remains to be worked out. The northernmost specimens I have examined were from the vicinity of Socorro, Socorro County, near the center of the State (UCLA collection). However, there are literature records that possibly pertain to this form from Albuquerque, Bernalillo County, and Española, Rio Arriba County (Van Denburgh, 1924: 213). Possibly the range of *marmoratus* is not in contact with that of the Colorado Plateau form *C. t. septentrionalis* Burger which occurs in northwestern New Mexico. The only locality in eastern New Mexico from which I have seen specimens is 12.5 miles NW Roswell, Chaves County (UMMZ 102723, 2 specimens).

The distribution of *marmoratus* in Texas appears to be confined mostly to the Trans Pecos region, although there are a few records to the northeast of that river near the New Mexico boundary. Locality records are given by Brown (1950: 129–130) under the name *C. tessellatus tessellatus*.

There are a number of localities known for *marmoratus* in Coahuila, but few in Chihuahua. Several collectors (including the author) have obtained specimens in the dunes in the vicinity of Samalayuca, Chihuahua, near the northern border of the State. In the University of Colorado Museum collections there are specimens of *marmoratus* from 35 miles S Samalayuca and 28 miles S Chihuahua (Dr. T. Paul Maslin, personal communication). Chrapliwy and Fugler (1955: 126) reported this subspecies from localities near Camargo in southeastern Chihuahua. Probably *marmoratus* occupies most of the eastern half of Chihuahua and the northwestern corner (excluding mountainous regions) as well. In Coahuila, *marmoratus* occurs south at least to Las Delicias in the west (see discussion under *variolosus*) and Monclova on the east. There are no records for the species in extreme northeastern Coahuila, and in view of its distribution in Texas, none is to be expected.

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