

RESURRECTED NAMES FOR MEXICAN POPULATIONS OF
BLACK-NECKED GARTER SNAKES, *THAMNOPHIS*
CYRTOPSIS (KENNICOTT)

ROBERT G. WEBB,

Department of Biological Sciences
Texas Western College, El Paso, Texas

ABSTRACT

Three distinct subspecies of *Thamnophis cyrtopsis* occur in western Mexico. One subspecies, *T. c. cyrtopsis*, is restricted to the Mexican plateau. The other two subspecies previously masqueraded under the name *Thamnophis cyrtopsis cyclides*. Because the holotype of *cyclides* is from Arizona and indistinguishable from *T. c. cyrtopsis*, Cope's *Eutaenia pulchrilatus* 1885 is resurrected for snakes from the highlands, and Jan's *Tropidonotus collaris* 1863 is resurrected for snakes from the lowlands. *Thamnophis c. pulchrilatus* occurs in the boreal pine-oak forests of the highlands of the Transverse Volcanic Belt and of the southern parts of the Sierra Madre Oriental and Occidental, whereas *T. c. collaris* lives in tropical lowland and subtropical mountainous habitats from Sonora to Chiapas to Veracruz. The principal characters distinguishing the several subspecies include the number of supralabials, infralabial markings, and nape and ventrolateral pattern. It is suggested that the name *Eutaenia dorsalis* Baird and Girard, 1853 is applicable to the upper Rio Grande population of garter snakes currently designated as *Thamnophis sirtalis ornata*.

Recent studies made upon the reptiles indigenous to an area extending from southwestern Durango across the Sierra Madre Occidental to southern Sinaloa have indicated the presence of three distinct populations of the *cyrtopsis* group of garter snakes. An effort to determine the status of these snakes has resulted in the relegation of the name *cyclides* to the synonymy of *cyrtopsis*, and the recognition of three subspecies, namely, the restriction of *cyrtopsis* to the Mexican plateau population, the resurrection

of Jan's *collaris* for garter snakes in the coastal lowlands of Sinaloa, and the use of Cope's *pulchrilatus* for those in the Sierra Madre highlands.

Applicability of the name cyrtopsis

The specific name most recently proposed for the black-necked garter snakes of this complex is *Thamnophis dorsalis* (Fitch and Milstead, 1961). There is some suggestion, however, that *dorsalis* is applicable to the upper Rio Grande population of *Thamnophis sirtalis*, which was designated as *T.s. ornata* by Fitch and Maslin (1961:297). Fitch and Milstead (1961) presented arguments for applying the name *dorsalis* to the black-necked garter snakes previously known as *cyrtopsis*, principally on the basis of the itinerary of General Churchill and the stated type locality, "between Monclova, Mexico, and the Rio Grande," or simply "Rio Grande" (Baird and Girard, 1853:32). There is no contrary evidence regarding the type locality of *dorsalis*, but the original description requires close scrutiny.

Baird and Girard included two items that seem inapplicable to *cyrtopsis*. These are the middorsal stripe "covering one and two half-rows of scales, margined on each side for one scale continuously with black," and the "series of rather large spots . . . from head to anus, and ranged just above the lateral stripe." In *cyrtopsis*, the middorsal stripe, mostly confined to the vertebral row, may cover nearly half of the adjacent rows in some cases, but the stripe lacks continuous black borders. Specimens of *cyrtopsis* characteristically have a checkerboard pattern (mostly uniform brown posteriorly), but oc-

EDITORIAL COMMITTEE FOR THIS PAPER:

ROGER CONANT, Curator of Reptiles, Philadelphia Zoological Garden, Philadelphia, Pennsylvania

DOUGLAS A. ROSSMAN, Assistant Professor of Zoology, Louisiana State University, Baton Rouge, Louisiana

casionaly there are a few large black spots in a single row on the neck. Baird and Girard did not mention the conspicuous black nape blotches of *cyrtopsis*.

Since the time of the type description, the name *dorsalis* had been generally associated with the population of *Thamnophis sirtalis* in the upper part of the Rio Grande drainage (except Ruthven, 1908:158, footnote) until the reinterpretation by Fitch and Maslin (1961:299) and Fitch and Milstead (1961). The basis for applying *dorsalis* to snakes from the upper Rio Grande probably stems from a figure in Jan and Sordelli (1867:livr. 25, pl. 4, fig. 1), who applied the name *Tropidonotus sirtalis* var. *dorsalis* to their illustration of a snake from "Fort Conrad, nord du Mexique" (= west bank of Rio Grande, opposite Valverde, about 24 miles S Socorro, Socorro County, New Mexico). The characters of the snake illustrated fit the type description of *dorsalis* and resemble those of specimens of *sirtalis* from the upper Rio Grande. Individuals of *Thamnophis sirtalis* from the Rio Grande drainage in New Mexico have a single row of spots just above the lateral stripe. They also exhibit a wide middorsal stripe that occupies the vertebral row and halves of the adjacent rows, and which has narrow continuous black borders (although these are not one scale wide). In large specimens, the dorso-lateral row of black spots tends to disappear and to be replaced by longitudinal dark lines. The black marks on the first dorsal scale row are lacking in some cases, contrary to the type description and the illustration of *dorsalis*. In spite of the stated type locality, it is likely that the name *dorsalis* belongs to the upper Rio Grande population of *Thamnophis sirtalis*. Cochran (1961:xi) and other authors have pointed out that data accompanying many specimens obtained during the early military or exploratory expeditions in the 1800's and deposited in the U.S. National Museum are in error.

If the name *dorsalis* is applied to the population of *sirtalis* of the Rio Grande it would replace the name *ornata* of Baird (1859). Regardless of the species to which *dorsalis* is applicable, the name *cyrtopsis* should be conserved for the black-necked garter snakes through application of the *nomen oblitum* rule of the 1961 International Code of Zoological Nomenclature (Smith and Williams, 1962; see also page 62 of present

report concerning *nomina oblita*.) Duellman (1961:114-115) offered a brief summary of the principal taxonomic and nomenclatural changes involving *Thamnophis cyrtopsis*.

Status of the name cyclides

The names *Thamnophis cyrtopsis cyrtopsis* and *T.c. cyclides* have both been applied to black-necked garter snakes from southern Durango and Sinaloa. While attempting to determine if the name *cyclides* applied to one of the three recognizable populations of that region, I discovered that the holotype of *cyclides* is from Arizona (Cochran, 1961:218) and is indistinguishable from specimens of *T.c. cyrtopsis*.

Cope (1861:299) described *cyclides* as a variety of *Thamnophis cyrtopsis* on the basis of a single specimen, USNM No. 5023, stated to have been included in a collection from Cape San Lucas, Baja, California, that was sent to the Smithsonian Institution by Louis John Xantus. Since a type locality of Cape San Lucas obviously was in error, Smith and Taylor (1950:330) took the liberty of re-assigning the locality as Guanajuato, Guanajuato. When the specific names of these garter snakes was subsequently changed from *eques* to *cyrtopsis* and northern and southern subspecies were recognized, the name *cyclides* was resurrected for snakes from the southern part of the Mexican plateau (see Smith, 1951).

The USNM catalog entry for No. 5023, dated October 10, 1861, seems to have been originally allotted to a *Thamnophis*. The locality and collector are indicated by ditto marks that refer to the preceding catalog entry of a *Cnemidophorus*, No. 5019, from Ft. Buchanan, Arizona, credited to Dr. B.J.D. Irwin. Subsequently, *Thamnophis* was crossed out, and, for some unknown reason, *Lichanura trivirgata* (Type), Cape San Lucas, and Xantus were inked in the appropriate places in the same catalog entry. Later, however, the *Lichanura* entry was crossed out and replaced by *Eutaenia cyrtopsis*, the locality was penciled in as Ft. Buchanan, Arizona, and the collector as Dr. Irwin (both written by Stejneger, according to Cochran, pers. comm.), and in the "Remarks" column the specimen was designated as *Thamnophis cyrtopsis cyclides* Cope = 5023 Type (written by Cochran). Leonhard Stejneger also initialed a penciled annotation in the "Remarks" column of the catalog

entry that the "locality & collector [Cape San Lucas and Xantus] probably only refers to the type of *Lichanura trivirgata*, now entered as 15502." Cochran (1961:218) indicated Ft. Buchanan as the probable type locality of *cyclides*. Cope (1900) credited several species from Fort Buchanan to Dr. B.J.D. Irwin, but one species (represented by three specimens of *Holbrookia maculata*, USNM 5025, designated as paratypes of *pulchra* in the catalog) from that locality is erroneously credited to Xantus (*op. cit.*:296). The collector of the *Holbrookia* is indicated by ditto marks, which occur in all preceding entries from No. 5019, and which refer to Irwin; Cope referred to Xantus, which had been inked in the previous catalog entry No. 5023.

The holotype of *cyclides* (Fig. 1), bearing metal tag number 5023, is a young female, approximately 247 mm in body length (tail 78 mm); with 19-19-17 scale rows, 162 ventrals, 79 caudals, 8 supralabials (intercalary scale between 6th and 7th on right side), 10 infralabials, 3 postoculars, 1-2 and 1-3 temporals, and the 4th and 5th supralabials entering the orbit. The supralabial sutures are boldly black-marked, whereas black is lacking on the infralabial sutures, except between the 9th and 10th infralabials. The top of the head is gray, bears faint parietal spots, and contrasts with the black nuchal blotches. The two black nuchal blotches are separated from each other by the middorsal stripe, where it is slightly expanded to a width of three scales; the stripe extends anteriorly to the parietals. The dorsolateral area is uniform pale brown posteriorly, but exhibits a checkerboard pattern of rather small, separate, black spots anteriorly, with the most prominent spots just above the pale lateral stripe and the largest spots on the neck. The ventrolateral stripe (mostly on first scale row) is now faded, but it is slightly darker than the pale lateral stripe and is marked by two rows of paired, non-alternating black spots (upper row largest).

The holotype of *cyclides* is similar to snakes herein designated as *Thamnophis cyrtopsis cyrtopsis*, and is unlike specimens of the species examined from the state of Guanajuato. *Thamnophis cyrtopsis* var. *cyclides* Cope, 1861, is thus considered to be a synonym of *Eutaenia cyrtopsis* (= *Thamnophis cyrtopsis cyrtopsis*) Kennicott, 1860, and the type locality as Fort Buchanan



Figure 1. Holotype of *Thamnophis cyrtopsis* var. *cyclides* Cope, 1861, (= *Thamnophis cyrtopsis cyrtopsis*), from Fort Buchanan, Arizona. Photograph by Ralph W. Axtell.

(= near Sonoita Creek above Patagonia, 45 mi. SE Tucson, Santa Cruz County), Arizona. Previously, Cope (1900:285) had noted "Fort Buchanan (Tucson), Arizona."

The subspecies of Thamnophis cyrtopsis in Western Mexico

This report is not intended as a revision of *Thamnophis cyrtopsis*. Although specimens have been examined from several localities in Mexico, I have made no effort to examine all the available material of the species, and have not concerned myself with a study of related forms. My purpose has been only to establish the identity of the three recognizable populations of *T. cyrtopsis* in western Mexico.

Since the resurrection of *cyclides* (Smith, 1951), subsequent authors have applied that name to one or the other of two distinct populations. Because the name *cyclides* is a synonym of *cyrtopsis* and not applicable to either of these populations, Cope's *pulchri-latus* and Jan's *collaris* are resurrected for them.

The black-necked garter snakes considered in this paper are characterized by: 19-19-17 dorsal scale rows; pale middorsal stripe mostly confined to vertebral row; pale lateral stripe on second and third scale rows; black collar indented behind, or consisting of two separate black blotches on neck; seven or eight supralabials; ventrolateral stripe pale

brown or blackish covering first scale row but encroaching on lower half of second scale row and lateral edges of ventrals; dark ventrolateral stripe absent in some cases, with pale lateral stripe broadened to cover first three dorsal scale rows; ventrolateral black markings usually largest on margins of first scale row and arranged irregularly or forming a pattern of paired spots; dorso-lateral area (between pale middorsal and lateral stripes) uniformly black or brownish, or with checkerboard pattern of alternating rows of black spots; dorsolateral area often showing pattern of narrow, longitudinal, light lines that result from pale keels on some scales; ventral surface immaculate, except for occasional small black spots laterally on anterior edge of some ventrals; tongue red, black-tipped; peritoneum whitish to brownish; females larger than males; ventrals and caudals fewer in females than males. Ventral counts were made according to the Dowling method (1951).

Thamnophis cyrtopsis cyrtopsis
(Kennicott)

Eutaenia cyrtopsis Kennicott, Proc. Acad. Nat. Sci. Philadelphia, [12]:333, 1860 (Rinconada, Coahuila, Mexico).

(*Thamnophis cyrtopsis*) Var. *cyclides* Cope, *Ibid.*, [13]:299, 1861 (Fort Buchanan, Arizona).

Eutaenia aurata Cope, Proc. U. S. Nat. Mus., 14:659, 1892 (Lake Valley, New Mexico).

Thamnophis cyrtopsis cyrtopsis Smith, Copeia, 1951(2):140, 1951.

Type and type locality.—Holotype, by original designation, USNM 8067; obtained by Lieut. Darius Nash Couch at "Rinconada Coahuila, Mexico," in 1853. The Rinconada where Couch collected is about 20 miles northeast of Ramos Arizpe, Coahuila, in the state of Nuevo León close to the Nuevo León-Coahuila state line (Conant, ms.).

Although Kennicott had at least three specimens before him (three localities are listed), the type description (1860:333) is based on No. 930 (USNM 8067), which is referred to as "the typical one," and is herein considered to be the holotype. In the USNM catalog, the entry for No. 8067 is *Eutaenia sirtalis* (*sirtalis* is crossed out in pencil), and it is designated in the "Remarks" column as "Type of *E. cyrtopsis* = old 930." The label accompanying the specimen jar is marked

"Type. 930 (8067) *Eutaenia cyrtopsis* Kenn. Rinconada, Coahuila, Mex., Couch."

Description of holotype.—Some features of this specimen as observed by Roger Conant were transmitted to me. The specimen, a male, has 19-19-17 scale rows, 173 ventrals, 89 caudals, 8 supralabials, 11 infralabials, 2 postoculars, 1-2 temporals, 4th and 5th labials entering eye, and a total length of 622 mm (tail length 151 mm). The middorsal stripe is expanded to a width of three scales before terminating at a point five scales posterior to the parietals (nuchal collar complete). In the dark areas between the middorsal and lateral stripes are relatively faint dark spots. Apparently there was a continuous brown or dark gray stripe along the first row of scales and the edges of the ventrals, but this is now faded so that the dark spots along this stripe are prominent.

Description.—The top of the head usually is gray, occasionally brown, contrasting with the black nape blotches. There are two black blotches on the neck separated by the middorsal stripe that usually extends anteriorly to the parietals; occasionally the nape blotches are fused medially (as in the holotype) forming a black collar that is indented posteriorly or partly interrupted (among 11 young of one brood from Río Chico, Durango, three had indented collars, two had partly interrupted collars, and six had two separate nape blotches).

The yellowish middorsal stripe, expanded to a width of about three scales just behind the nuchal blotches, may have scalloped edges and be confined to the vertebral row or, in addition, may occupy small parts of the scales of the adjacent rows. There are eight, rarely seven, supralabials. The supralabial sutures are black, with the three posteriormost sutures often having the black twice as broad as those on the other sutures. All the infralabial sutures may be marked with black, some of the sutures in the middle of the lower lip may lack black, or all infralabial sutures may lack black except the posteriormost. Most of the dorsolateral area is uniform brown (sloughed scales gray), but occasionally black marks are adjacent to or intrude onto the pale stripes. There is either a checkerboard pattern of black spots or a single row of large black spots on the neck. Young specimens tend to have spotted patterns throughout the length of the body. Preserved specimens, because of sloughing

of the brown scales, may show prominent spotted patterns throughout the length of the body, with the anterior pattern of large black spots becoming progressively disrupted into small flecks posteriorly.

A distinct ventrolateral stripe below the lateral light stripe is brownish, or pale gray, usually slightly paler than the dorsolateral area. It also includes a pattern of small black marks mostly arranged in pairs (two rows of non-alternating spots one above the other). The spots of the lower row cover the adjacent edges of the ventrals and scales of the first dorsal row, whereas spots of the upper row cover the adjacent edges of scales of the first and second dorsal rows. The ventrolateral spots may be fused into a large spot or streak on the neck, or fused into small hour-glass shaped marks, or may be small and virtually absent, especially posteriorly.

The specimen shown in Figure 2 is representative of Mexican specimens of *T. c. cyrtopsis* from Chihuahua and Durango.

Among 55 individuals, the number of ventrals averages 171.3 (157-184), and in 47 individuals, the number of caudals averages 88.7 (71-100). The sex of several specimens was not determined. Ventrals in 20 males average 171.4 (164-178) and in 15 females 166.8 (157-170). Caudals in 16 males average 90.6 (80-98) and in 12 females 83.0 (71-94). In 11 unsexed young removed from a gravid female (Río Chico, Durango), ventrals average 176.5 (173-184) and caudals average 90.7 (81-99). Supralabials counted on each side of the head are eight (93.5%), rarely seven.

Remarks.—The descriptive remarks per-

tain only to the specimens examined. cursory examination of specimens from Coahuila and Texas suggests a wider middorsal stripe (vertebral row and halves of adjacent rows), and a more extensive spotted pattern in the dorsolateral areas on snakes from those states than among specimens from farther west.

Range.—In Durango and Chihuahua, the subspecies *cyrtopsis* occurs on the plateau and on the east-facing slopes of the Sierra Madre to elevations of approximately 7000 feet. In Mexico, in general, the nominate race is principally a plateau form that is replaced to the south, west, and east in highland areas by *pulchrilatus* and in lowland or tropical areas by *collaris*. During this study, 55 Mexican specimens of *T. c. cyrtopsis* were examined from the states of Chihuahua, Durango, Sonora, and Zacatecas (Fig. 6). These specimens and their respective localities are:

Chihuahua: 4 mi. S and 1 mi. W Santo Tomás (KU 45330-33); 3 mi. S and 10 mi. E Pacheco (KU 44123); 1.5 mi. S and 2.5 mi. E Umira (KU 44287); 2 mi. SW San José Babicora (KU 47318); 2 mi. W Samachique (KU 47317); 3.5 mi. WNW Cocomarachic (KU 51943); 11 mi. WNW Cocomarachic (KU 51922); 7 mi. S Banderas (KU 47320-21); 2 mi. S and 5 mi. W San Francisco (KU 44289); 15 mi. N. Camargo (KU 53736); Presa Catalina, 15 mi. N Villa Ocampo, Durango (AMNH 88722); 15 mi. S and 6 mi. E Creel (KU 44290); 16 mi. S and 13 mi. W Creel (KU 51925); 23 mi. S and 1.5 mi. E Creel (KU 44288); Mojarachic (UI 23430-32); 12 mi. N Ciudad Chihuahua (RGW 2795); 20 mi. N Ciudad Chihuahua (RGW 3378).

Durango: Río Chico (RGW 2482 and 11 young); 10 mi. W Metates (KU 68727); 1 mi. N Chorro (KU 39975); 12 mi. N Ciudad Durango (AMNH 88745); 22 mi. WSW Ciudad Durango (CAS 87349, 87356); 31 mi. SE Villa Ocampo (AMNH 88723); 4 mi. S Morcillo (MSU 4431-33); 4 mi. E Altar (LACM 7170); Buena Vista 4 mi. NNE Boquilla (MSU 3629); near Guanaceví (USNM 46367). **Sonora:** 5 mi. E Altar (LACM 7170); Buena Vista (KU 47566); 3.5 mi. N. Ciudad Obregón (LACM 7171); 10 mi. N Guaymas (KU 73634); 9 mi. NNE Imuris (KU 48925). **Zacatecas:** 5 mi. SW Rancho Grande (AMNH 88744); Río Atotonilco, 2 mi. SE Sain Alto, (AMNH 88746); 2 mi. E Villa

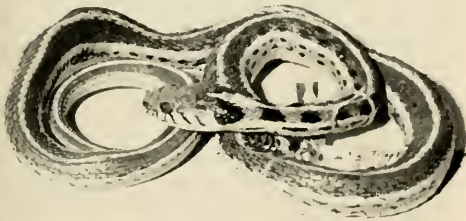


Figure 2. *Thamnophis cyrtopsis cyrtopsis*, UI 23432, from Mojarachic, Chihuahua, showing features generally characteristic of specimens from the Mexican plateau. Photograph by Isabelle Hunt Conant.

Insurgentes (MSU 566); 5 mi. S. Ojo Caliente (UI 40355).

Thamnophis cyrtopsis collaris (Jan),
new combination

T{ropidonotus} collaris Jan, Elenco Sist.

Ofidi . . ., p. 69, 1863; Jan and Sordelli, Iconographie generale des ophiidiens, 2:4, livr. 25, pl. 5, fig. 2, December 1867 (reprint 1961).

?*Thamnophis vicinus* Smith, Zoologica, 27:104, October 23, 1942 (near Temascal, about 20 kilometers east of Morelia, Michoacán).

Thamnophis cyrtopsis cyclides Smith (in part), Copeia, 1951(2):140, 1951.

Type and type locality.—Holotype, presumably by monotypy, originally deposited in museum in Bonn; probably lost (no inquiry made by author). The type locality is unknown other than "Messico," but was restricted to Guanajuato, Guanajuato, by Smith (1951:140).

Description of holotype.—The one-line description (Jan, 1863:69) is brief: "* *T. collaris* m. (8. 1. 3. 19) (M. Bonn Messico)." At the bottom of the page the asterisk indicates the following footnote: "(*) Le chiffre posti fra parentesi indicano nell'ordine progressivo il numero normale dei supralabiali, dei preoculari, dei postoculare, e delle serie longitudinali di squame, d'ogni specie."

The Iconographie, prepared to supplement the Elenco, shows a specimen of *collaris* that agrees with the description excepting for the occurrence of two postoculars (instead of three) on the left side of the head. The specimen illustrated in the Iconographie (1867:livr. 25, pl. 5, fig. 2) is from the "Collection Westphal-Castelnau, a Montepellier."

Description.—The top of the head is gray or brown (often blackish in preserved specimens), the color extending onto the neck in some cases and, contrasting with the black collar. The collar is partly interrupted in some cases by being indented posteriorly where the pale middorsal stripe terminates. The middorsal stripe, which has scalloped edges, is confined to the vertebral row or occasionally intrudes slightly onto scales of the adjacent rows; it may be slightly expanded just behind the nuchal collar. The sutures on the supralabials are narrowly marked with black, which is often lacking on the suture

between the first and second labial. All infralabial sutures may lack black, but usually a small black mark occurs on the suture between the last (ninth and tenth) infralabials. The dorsolateral area between the pale middorsal and lateral stripes is pale to dark brown, having a checkerboard pattern of black spots the length of the body. The upper row of black spots touches the middorsal stripe, and the lower row touches the lateral stripe. In some specimens the dorsolateral area is almost uniform brown, especially posteriorly with the black spots small and indistinct. In the dorsolateral areas, parts of many scales (and skin between scales) are often flecked with white, and the light keels of the dark scales stand out as narrow, interrupted light lines. The dark ventrolateral stripe is lacking (first scale row same color as pale lateral stripe), but often there is a suggestion of a narrow, dim, brown line on the lower half of the first scale row and edges of the ventral scales. The first two rows and most of the third scale row are white, usually having two rows of black flecks and spots arranged alternately or in irregular fashion. Some specimens have some of the marks arranged in pairs, or they are virtually lacking except on the neck. The largest, and most consistent, spots occur on the lower half of the scales of the first row and on the adjacent edges of the ventrals. The specimens shown in Figure 3 are representative of *T. c. collaris*.

Coloration of a living juvenile (body length 213 mm; RGW 2887, 12 miles SE Alamos, Sonora) is as follows: top of head dark gray; nuchal collar black; middorsal stripe buff, with orange tint on neck and pale yellow just behind collar; dorsolateral areas brown with black spots and pale green to whitish flecks, and with brown-keeled scales contrasting across the black spots; first three scale rows pinkish buff with first scale row very pale brown anteriorly; venter white; iris reddish yellow; tongue red, black-tipped.

Among 121 individuals, the number of ventrals averages 155.0 (143-167), and in 85 individuals, the number of caudals averages 92.5 (76-109). The sex of several specimens was not determined. Ventrals in 38 males average 158.0 (149-166) and in 65 females 153.4 (145-167). Caudals in 28 males average 97.5 (77-109), and in 39 females 88.7 (76-103). Supralabials counted

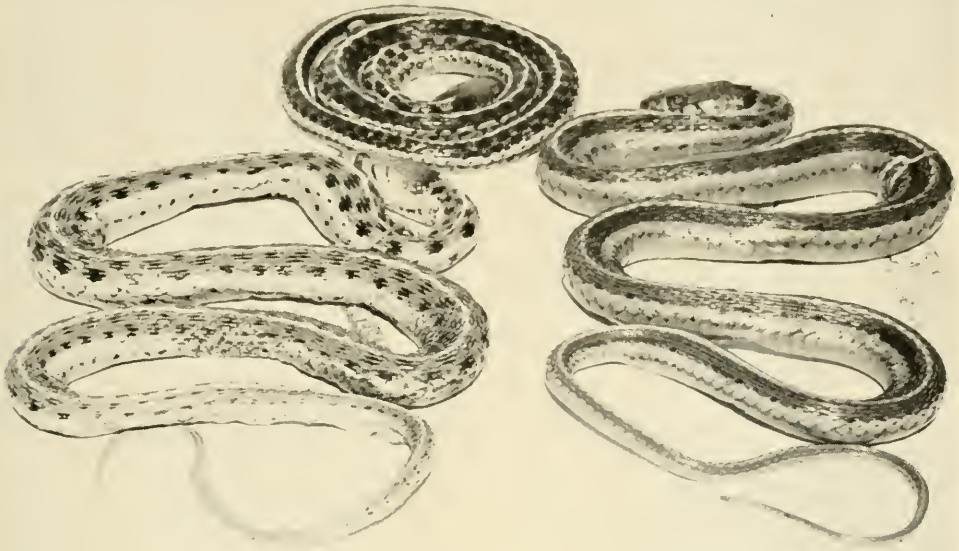


Figure 3. *Thamnophis cyrtopsis collaris* showing variation in pattern—upper center, RGW 2394 from 8 mi. W El Palmito, Sinaloa; lower left, USNM 46605 from Huajuapán, Oaxaca; lower right, UI 23416 from 10 mi. NE Cuernavaca, Morelos. Photograph by Isabelle Hunt Conant.

on each side of the head are eight (94.3%), rarely seven (4.4%), or nine.

Remarks.—One of the specimens available to Kennicott in his preparation of the type description of *Eutaenia cyrtopsis* (= *Thamnophis cyrtopsis cyrtopsis*) was USNM 8066 from "Durango, Lieut. Couch." Mr. Roger Conant, who examined the specimen, sent me data indicating that it possesses characteristics applicable to *collaris*. Presumably the specimen is illustrated, but designated as USNM 8062, by Cope (1900:1050), who referred two specimens to that number (*op. cit.*:1051). The enigmatic 8062 is also applied to an Illinois specimen of *Thamnophis* by Yarrow (1882:115, as *Eutaenia faireyi*) and Cope (1900:1024, as *Eutaenia proxima*).

In Durango, *collaris* is known only from the deep barrancas that dissect the Sierra Madre, and from the highest subtropical parts of the west-facing slopes; presumably USNM 8066 came from one of those two areas. Two specimens of *collaris* (BMNH 1882.11.15.21 and 1882.11.15.26), collected

by Alphonse Forrer, are recorded from Ciudad (=La Ciudad) in the Durango highlands where the subspecies *pulchrilatus* occurs; Forrer also obtained BMNH specimens at Ventanas (=Villa Corona) in a subtropical habitat in a large barranca that is reached by trails and pack animals in about five hours from La Ciudad. The two BMNH specimens of *collaris* are doubtless from lower elevations, either along the trail to, or at, Ventanas (the problem of mixup of localities along this trail is discussed by Conant, ms).

Geographic variation seems to occur in the degree of black spotting on the first three white dorsal scale rows; black marks, however, almost always occur on the adjacent edges of the ventrals and scales of the first dorsal row. Specimens from Jalisco and northward usually have black marks irregularly arranged on the adjacent edges of scales of the first and second and second and third scale rows, whereas snakes from Michoacán and southward usually have these black spots reduced to specks, or in some cases they are

indistinct and virtually lacking (see variation in Fig. 3). There seems to be no corresponding north-south variation in ventral and caudal counts. Of geographic interest, however, is a high frequency of seven supralabials in the state of Oaxaca (6 of 22 counts, or 27.3%).

Smith (1942:104) described *Thamnophis vicinus* from the highlands of Michoacán, and distinguished it from *Thamnophis cyrtopsis* by the absence of a pale middorsal stripe. Subsequent workers considered *vicinus* a pattern phase and junior synonym of *cyrtopsis* (see discussions by Bogert and Oliver, 1945:358-359; Milstead, 1953:349-350, 357; Duellman, 1961:114-115). This logical interpretation, however, is still largely theoretical and subjective; more specimens and further study are necessary to determine the status of *vicinus*. If *vicinus*, is assumed to be a pattern phase of *cyrtopsis*, it is necessary to place *vicinus* as a synonym of either *collaris* or *pulchrilatus*. But because *vicinus* has a dorsal pattern different from both *collaris* and *pulchrilatus*, and because all three forms occur in the same general area, it is somewhat questionable whether *vicinus* is a synonym of *collaris* or *pulchrilatus*. Based on Smith's data (*loc. cit.*) and the examination of one paratype of *vicinus* (UI 23435), the characteristics of *vicinus* most closely resemble those of *collaris* (caudal counts are most like *pulchrilatus*); specimens of *vicinus* also are recorded from the same locality (Morelia) as specimens of *collaris* (none of *pulchrilatus* are from same localities as specimens of *vicinus*). For the moment, I consider *vicinus* a synonym of *collaris*.

Tropidonotus collaris Jan, 1863, is the earliest name for the black-necked garter snakes in the coastal lowlands and subtropical highlands of western Mexico. That name, however, has not been used in scientific literature for over 50 years (last used by Cope, 1900:1062), and *collaris* thus is a *nomen oblitum* and unavailable according to the 1961 Code of International Nomenclature (Article 23b). It would seem then that the only junior synonym available, *vicinus*, should be used instead of *collaris*. For the reasons given below, however, I feel justified in using *collaris*.

Owing to published criticisms concerning the wording of Article 23(b) relative to *nomina oblita* (see Smith and Long, 1966,

and references therein), I wrote Dr. Hobart M. Smith for his advice, to which he replied "I would urge that you use *collaris* and *pulchrilatus* if they happen to be applicable to either of the distinct populations you intend to recognize. These names are not really *nomina oblita*, for I am absolutely certain that the Commission did not intend for the definition of a *nomen oblitum* to come out as it did in the 1961 version of the Code. I have checked this with a sufficient number of those involved so that I am sure the definition would be more like this: a name *at whose expense* a junior synonym has been used for a period of at least fifty years prior to discovery of the error. Neither name qualifies by this definition, which is the only sensible one for a *nomen oblitum*. Regardless of definition, I have just been informed by the Commission's office that the *nomen oblitum* rule will no longer be invoked in any actions by the Commission until the matter can again be considered at the next International Congress of Zoology."

Range.—In western Mexico, the subspecies *collaris* occurs in the coastal lowlands, and on the west-facing slopes of the Sierra Madre to elevations slightly exceeding 6000 feet. Individuals of *collaris* also occur inland in the lowland tropical habitats of the numerous large barrancas that dissect the Sierra Madre. In southern Sinaloa and adjacent southwestern Durango, the habitats vary from thorny scrub forest, and tropical deciduous forest, to upper arid or mixed boreal-tropical (cloud forest) associations at the highest elevations.

In Mexico, in general, *collaris* seems to be characteristic of tropical or subtropical habitats, occurring in lowlands and in highland areas to elevations near 7000 feet (Zacualtipan, Hidalgo). For this study, 121 specimens of *collaris* have been examined from the states of Chiapas, Chihuahua, Durango, Guanajuato, Guerrero, Hidalgo, Jalisco, México, Michoacán, Morelos, Oaxaca, Sinaloa, Sonora, Veracruz, and Zacatecas (Fig. 6). Localities and specimens are:

Chiapas: Fenix, 3 mi. NW Monserrate (UI 6328). **Chihuahua:** Urique (KU 56233-35, 63739-40); 3 mi. NE Temores (KU 51926). **Durango:** 1.6 mi. E Sinaloa-Durango state line (LACM 7182); Huazamota (USNM 46482); "Durango" (USNM 8066, see page 61); La Ciudad (BMNH 1882.11.15.21, 1882.11.15.26, locality in er-

ror, see page 61); 4 mi. NE Mezquital (MSU 4435-36); 8 mi. N Mezquital (MSU 4434). **Guanajuato:** 4 mi. Acámbaro (UI 23413); Irapuato (UI 35059-61); "Guanajuato" (USNM 9892, 14434, 26147-48). **Guerrero:** vicinity *Chilpancingo* (KU 23797-98, UI 35014); 7 mi. E Chilpancingo (UI 23426); Omilteme (UI 23423). **Hidalgo:** S Zacualtipán (UI 23417); 5 mi. S Zacualtipán (UI 23422). **Jalisco:** Guayavas (LACM 1826); Rancho San Antonio, near Santa Clara (LACM 1824-25); Rancho El Rodeo, near San Marcos, Sierra de Ixtlán (MVZ 56318); Sierra de Cuale (KU 73631, 73633, 73652); 3 km. NE Talpa de Allende (KU 73629-30). **México:** Nochitongo Ditch, 30 mi. N Mexico City on Mex. Central Railroad (USNM 19003). **Michoacán:** Morelia (UI 23414); near Temascal, about 20 km. E Morelia (UI 23435, paratype of *vicinus*, formerly EHT-HMS 15897); Los Reyes (USNM 46463); Tacicuaró (USNM 110783). **Morelos:** 10 mi. NE Cuernavaca (UI 23416); Campo Agrícola, Progreso (UI 26062-65). **Oaxaca:** Cerro San Felipe (UI 52972, 53110-12); Huajuapán (USNM 46605); Cerro Pecho Blanco, Juchitán (UI 37184); San Felipe del Agua (UI 46762-63); Juquila Mixes (UI 52537); Oaxaca (UI 23424-25). **Sinaloa:** Rosario (USNM 46457); 3.8 mi. N La Cruz turnoff on Mex. Hwy. 15 (LACM 7172); 5.6 mi. W Mex. Hwy. 15 on La Cruz turnoff (LACM 7174); 13.6 mi. S Los Mochis turnoff on Mex. Hwy. 15 (LACM 7177); 29 mi. N los Mochis (KU 67725); 1 mi. E Santa Lucía (KU 40349, MSU 567); 2.2 km. NE Santa Lucía (KU 78923-24); 19.2 km. NE Santa Lucía (KU 78925-29); El Batel, 70 km. NE Mazatlán (MVZ 44704); Copala (MVZ 76568); 6.4 mi. S Mazatlán (CAS 95755); 0.7 mi. S Terreros (LACM 7184); 4.1 mi. N Terreros (LACM 7176); 15.7 mi. S Terreros (LACM 7175); 5 mi. SW El Palmito (KU 75632-33, 80761); 8 mi. W El Palmito (RGW 2394); San José del Oro (KU 83413); 4.2-6.9 mi. S Culiacán (LACM 7178-80, 7183); 68.7 mi. N Culiacán (LACM 7173); 16.9 mi. S Culiacán (LACM 7181); Costa Rica, 16 mi. S Culiacán (UI 34903-13); El Dorado (UI 46961-71); 1 mi. NE El Fuerte (UI 40356). **Sonora:** 22.5 mi. NW Navajoa (UI 40357); Alamos (MVZ 66207); 12 mi. SE Alamos (RGW 2887); stream above Alamos, on

Sonora-Chihuahua border (MVZ 74194). **Veracruz:** "Orizaba" (USNM 30496); "Mex. plateau, Mirador-Veracruz state" (USNM 25038). **Zacatecas:** Hacienda de San Juan Capistrano (USNM 46423).

Thamnophis cyrtopsis pulchrilatus (Cope),
new combination

Eutaenia pulchrilatus Cope, Proc. Amer. Philos. Soc. (for 1884), 22:174, 1885.

Thamnophis cyrtopsis cyclides Smith (in part), Copeia, 1951 (2):140, 1951.

Type and type locality.—Holotype by monotypy, USNM 9899, "one specimen from Dr. Dugès; locality uncertain but probably Guanajuato."

Description of holotype.—Cope's original description of *pulchrilatus* (1885:174) agrees with specimens here assigned to *pulchrilatus* except for his statement that, "There are no spots below the lateral light line, either on the neck or elsewhere." Later (1900:1062), Cope modified the type description mentioning that "There are sometimes spots below the lateral light line on the neck, due to interruptions in the lateral dark stripe."

The holotype of *pulchrilatus* (Fig. 4), bearing metal tag number 9899, is a female, with a body approximately 370 mm in length and a tail measuring 104 mm, 19-19-17 scale rows, 157 ventrals, 70 caudals,

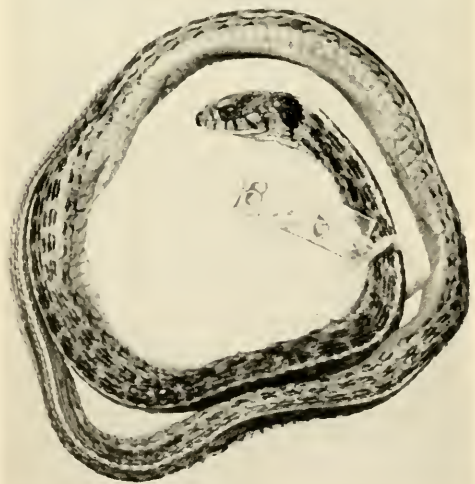


Figure 4. Holotype of *Eutaenia pulchrilatus* Cope, 1885 (= *Thamnophis cyrtopsis pulchrilatus*), from "probably Guanajuato." Photograph by Ralph W. Axtell.

7 supralabials, 10 infralabials, 3 postoculars, 1-2 temporals, and with the 3rd and 4th supralabials entering the orbit. The supralabial sutures are marked with black pigment that reaches the edge of the lip in most cases; the infralabials lack black, except between the last two. Most scales have been sloughed off. A black nuchal collar is faintly interrupted by narrow median pale streaks that extend to the parietals. The middorsal stripe is scalloped and confined to the vertebral row. The dorsolateral area consists of a checkerboard pattern of black spots the length of the body; the median, keeled areas of each scale in the black spots are pale, producing a prominent narrow-lined effect. The pale lateral stripe occupies the adjacent halves of the second and third scale rows. The ventrolateral stripe is brown (where scales are not sloughed) with two distinct, non-alternating rows of black marks. The belly is immaculate except for occasional small black marks laterally on the anterior edges of some ventral scales.

Description.—The top of the head is dark brown or black, and often does not contrast with the black collar. The nuchal blotches are fused forming a black collar that occasionally may be partly interrupted, and it is indented posteriorly where the slightly expanded middorsal stripe terminates. The black collar often is confluent with the black dorsolateral areas. The pale middorsal stripe, which has scalloped edges, is confined to the vertebral scale row, but occasionally covers small parts of the adjacent rows. There are seven supralabials, rarely eight, having thin black lines or spots on the labial sutures. The black color usually is broadest on the suture between the sixth and seventh supralabials. The infralabial sutures lack black except for a small black mark that usually occurs on the suture between the last (ninth and tenth) infralabials. The dorsolateral area between the pale middorsal and lateral stripes is black, or brown, having an obscure checkerboard pattern of black spots the length of the body. The pattern is most

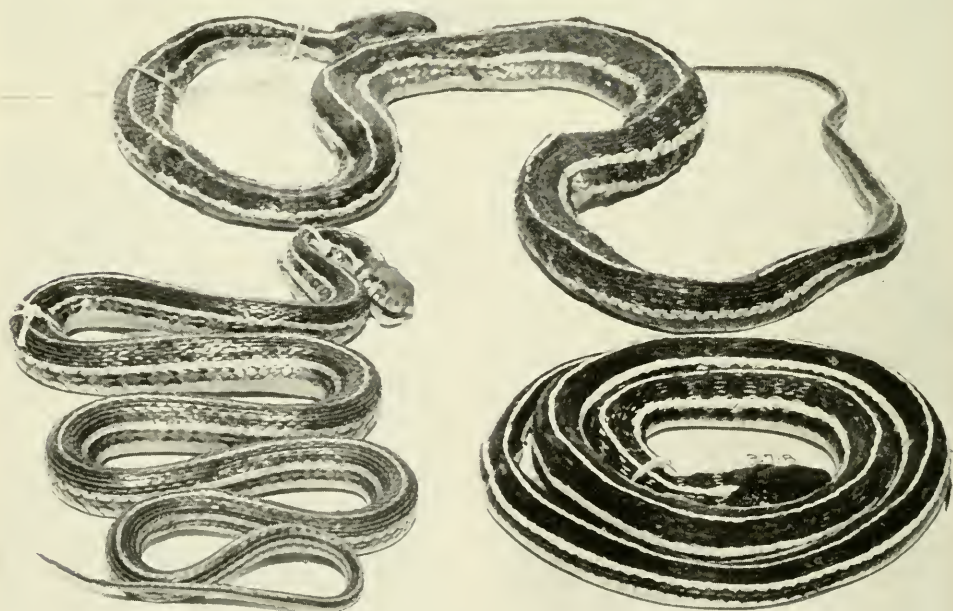


Figure 5. *Thamnophis cyrtopsis pulchrilatus* showing variation in pattern—upper center, USNM 46432 from Las Vigas, Veracruz; lower left, UI 23420 from “where to Chinapa branches,” Michoacán; lower right, RGW 3718 from Hacienda Coyotes, Durango. Photograph by Isabelle Hunt Conant.

distinct in preserved specimens having sloughed scales. Dark scales often have contrasting pale keels that stand out as narrow, interrupted, light lines, and parts of some scales (and skin between scales) may be flecked with white. The keels and other parts of sloughed scales show pale flecks. The dark ventrolateral stripe below the lateral light stripe, if not mostly black, has two prominent rows of paired black spots (one above the other); the spots of each pair may be fused into hour-glass shaped marks, or fused into a single black spot. The body pattern of *pulchrilatus* is illustrated by Duellman (1961:115, fig. 10A). The specimens shown in Figure 5 are representative of *T. c. pulchrilatus*.

Coloration of a live female (body length 430 mm; RGW 3718 from Hacienda Coyotes, Durango) is as follows: top of head black, with tip of snout brown; nuchal collar black; middorsal stripe orange-yellow; dorsolateral areas black, with inconspicuous brown keels on some scales; lateral stripe yellow on neck, white elsewhere; ventrolateral stripe mostly black with brown flecks aligned to form narrow line posteriorly, but alternating with black spots anteriorly; sides of head and underside of head and neck, pale yellow; belly pale blue-white, having pale yellow on posterior margins of ventrals and tending to form midventral line, especially on tail; iris black and orange-brown; tongue red, black-tipped.

Among 31 individuals, the number of ventrals averages 162.8 (151-173), and in 27 individuals, the number of caudals averages 79.4 (68-94). The sex of several specimens was not determined. Ventrals in 15 males average 164.6 (157-173), and in 12 females 162.7 (151-170). Caudals in 13 males average 82.5 (76-94), and in 10 females 76.1 (68-86). Supralabials counted on each side of the head are seven (95.4%), rarely eight; one specimen (USNM 110780, from Tacicuario, Michoacán) is unusual in lacking all the sutures (all supralabials fused), except for the suture between the second and third labial on both sides of the head.

Remarks.—Geographic variation occurs in the darkness of the dorsolateral area and ventrolateral stripe. Snakes from high elevations in the Sierra Madre Occidental (Durango) and Sierra Madre Oriental (Veracruz and Puebla) have almost solid black dorsolateral

and ventrolateral areas, whereas most snakes from the Trans-Mexican Volcanic Belt (Michoacán) have paler ground colors and more conspicuous patterns (see Fig. 5). The ground color of one specimen from Morelos in the Volcanic Belt is black, and the difference in pattern is perhaps correlated with altitude (black at highest elevations, paler at lower elevations). Conant (1963:494) mentioned some of the black individuals from Durango.

Among eight specimens from Tacicuario, Michoacán, seven are *pulchrilatus* and one a *collaris*; none shows characteristics of both subspecies. The one specimen of *collaris* probably is from a different area and lower elevation than the seven *pulchrilatus*. Of seven snakes recorded from "Guanajuato" (city or state unknown), four are *collaris* and three are *pulchrilatus* (including the holotype). The exact geographic provenance of these seven snakes is unknown. Cope (1879:266) listed one of the snakes, USNM 9892, from Guadalajara, and Dr. Edward W. Nelson believed that at least some of Alfred Dugès' specimens sent to the USNM "labeled as coming from Guanajuato, . . . were given him by students and that the specimens may not have come from that locality" (Kellogg, 1932:8).

Eutaenia pulchrilatus Cope, 1885, is the earliest and only name (senior synonym) available for this recognizable population, but the name has remained unused in the scientific literature for over 50 years (last usage by Cope, 1900:1062). If the wording of Article 23(b) is to be rigidly construed, the name is a *nomen oblitum* according to the 1961 International Code of Zoological Nomenclature. The name *pulchrilatus*, however, is employed because there is no junior synonym available, and because of criticism and probable revision of Article 23(b) (see page 62 of present report concerning *nomen oblitum*).

Range.—In Durango, the subspecies *pulchrilatus* occurs in the highest parts of the Sierra Madre Occidental in the boreal, non-tropical, pine-oak forest, and, judging from other records, *pulchrilatus* is also found in corresponding habitats in the Sierra Madre Oriental of eastern Mexico and the inter-connecting Transverse Volcanic Range or Cordillera Volcánica across southern Mexico. In Mexico, *pulchrilatus* seems to be characteristic of mountainous pine-oak regions

at elevations exceeding a general level of 7000 feet. Some of these regions may be isolated. In this study 33 specimens have been examined from the states of Durango, Guanajuato, México, Michoacán, Morelos, Nayarit, Puebla and Veracruz (Fig. 6). Localities and specimens are:

Durango: 2 mi. NE El Salto (MVZ 67426); 3 mi. E El Salto (CAS 91855); Hacienda Coyotes (RGW 3718); 1.5 mi. W San Luis (MSU 562-64); Rancho Las Margaritas, 28 mi. E and 17 mi. W Vicente Guerrero (MSU 559, 561, 578). **Guanajuato:** "Guanajuato" (USNM 25363, 14433). **México:** near Zitácuaro, 2 mi. S San Martín (UI 23411-12); Villa Victoria (UI 23415); "Valley of Mex and Toluca" (USNM 32279-80). **Michoacán:** 17 mi. W Jiquilpan (AMNH 87570); "where road to Chinapa branches" (UI 23420-21); Tacicuaró (UI 23418-19, USNM 110777-

81). **Morelos:** 2 mi. W Huitzilac (KU 61179). **Nayarit:** Santa Teresa (USNM 46420-21). **Puebla:** Totalco, San Antonio Limon (UI 23427); Río Octapa, 2.5 mi. NNE Teziutlán (AMNH 88794). **Veracruz:** Las Vigas (USNM 46432); 2 km. E Las Vigas (KU 25901).

Comparisons and Relationships

The populations recognized in this paper—*cyrtopsis*, *collaris*, and *pulchrilatus*—are subspecifically related; they are distinguished from one another by combinations of characteristics, and they show intergradation. The geographic distribution of the specimens examined is shown in Figure 6.

Ventral and caudal counts overlap; ventral counts show a transition from the highest counts in *cyrtopsis*, through intermediate counts in *pulchrilatus*, to the lowest counts in *collaris*, whereas the caudal counts are

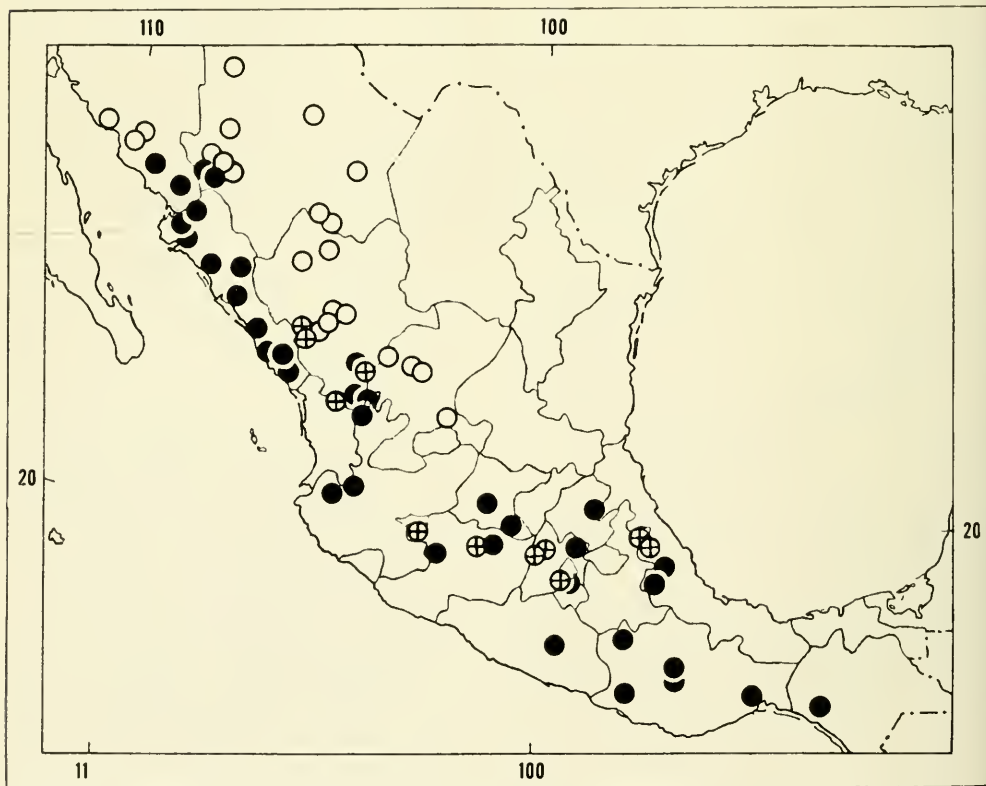


Figure 6. Map of Mexico showing geographic distribution of specimens examined of three subspecies of *Thamnophis cyrtopsis*—*T. c. cyrtopsis*, open circles; *T. c. collaris*, solid circles; *T. c. pulchrilatus*, crosses in circles. Intergrades are assigned to the subspecies they most closely resemble. Specimens representing localities a short distance apart share the same circle.

highest in *collaris*, intermediate in *cyrtopsis* and lowest in *pulchrilatus*. Four principal distinguishing characters—nape and ventrolateral pattern, number of supralabials, and infralabial markings—occur in different combinations in the three subspecies. The subspecies *collaris* and *pulchrilatus* share two characters (black collar and black lacking on infralabial sutures) not found in *cyrtopsis*, and seem more closely related to each other than to *cyrtopsis*. The subspecies *pulchrilatus* possesses one character in common with *cyrtopsis* (paired spots in ventrolateral stripe), and *cyrtopsis* has one character possessed by *collaris* (eight supralabials). The subspecies *collaris* and *pulchrilatus* each have one character not shared with *cyrtopsis* (dark ventrolateral band lacking with irregular arrangement of black spots in *collaris*, and seven supralabials in *pulchrilatus*). The most distinct subspecies seems to be *cyrtopsis*, for it possesses two characters shared by neither *collaris* nor *pulchrilatus* (blotches on nape and black infralabial sutures). The subspecies *cyrtopsis* and *collaris* possibly attain a larger maximum size than *pulchrilatus*. The largest *collaris* is about 800 mm, and the largest *cyrtopsis* about 702 mm, whereas the largest *pulchrilatus* is about 560 mm in body length.

Intergradation

Some specimens have characteristics indicating intergradation. In Durango, intergradation between *cyrtopsis* and *pulchrilatus* is expected on the high east-facing slopes of the Sierra Madre where *cyrtopsis* of the plateau and foothills is replaced by *pulchrilatus* in the pine-oak forest at the higher elevations. Two specimens from 22 miles WSW Ciudad Durango, Durango, taken at about 7500 feet elevation, suggest that intergradation between *cyrtopsis* and *pulchrilatus* occurs in that region; one specimen (CAS 87349) is referable to *cyrtopsis*, but the other (CAS 87356) is most like *cyrtopsis* although it resembles *pulchrilatus* in having seven supralabials (right side only), a nuchal collar, black dorsolateral areas, and in having the paired black spots of the ventrolateral band larger than those in *cyrtopsis*.

In western Mexico, contact between *cyrtopsis* and *collaris* seems to occur in highland areas where the tropical west-facing slopes merge with the temperate east-facing slopes and there is no interposition of a

boreal pine-oak forest, and also in the numerous tropical barrancas and canyons that dissect the Sierra Madre. Five specimens (KU 56233-35, 63739-40) from Urique in a large barranca in western Chihuahua are most like *collaris*, but resemble *cyrtopsis* in having a pale brown ventrolateral stripe with paired black spots; the black collar is partly interrupted in three specimens, and the middorsal stripe notably expanded just behind the collar in two specimens.

In western Mexico specimens of *collaris* often show paired black spots on the first scale row like *cyrtopsis*, but in *collaris* the ventrolateral brownish stripe is lacking. Some specimens of *collaris* having ventrolateral patterns resembling *cyrtopsis* occur in areas of expected intergradation. Among three *collaris* from near Mezquital in the shallow tropical valley of the Río Mezquital in southwestern Durango, one (MSU 4434) has paired ventrolateral black spots (some fused) on the anterior part of the body. Another specimen (KU 83413) from San Jose del Oro, Sinaloa, has a partly divided collar and many ventrolateral black marks paired as in *cyrtopsis*; near El Palmito, Sinaloa, at an elevation of 6100 feet, two of three specimens (KU 75633, 80761) resemble KU 83413, except that the collar is uninterrupted in 80761.

Northward in coastal regions of Sonora, intergradation between *cyrtopsis* and *collaris* occurs near Ciudad Obregón. One specimen (LACM 7171) from 3.5 miles N Ciudad Obregón is most like *cyrtopsis*, but it has dark brown dorsolateral areas with black spots throughout the length of the body, and a ventrolateral pattern (some black spots paired as in *cyrtopsis*) like *collaris*.

Two specimens of *collaris*, from the states of Veracruz (USNM 25038) and México (USNM 19003), have ventrolateral patterns in which the spots are mostly or partly arranged in two rows as in *cyrtopsis* and *pulchrilatus*. One specimen of *collaris* from Guanajuato (USNM 23413) seems to be intermediate in having 7-8 supralabials and paired ventrolateral spots as in *pulchrilatus*.

Most Mexican specimens of the three subspecies of *Thamnophis cyrtopsis*, with further aid provided by the descriptions and illustrations, can be readily identified by the following combinations of characters in the key below:

1. Eight supralabials; black collar or two separate blotches on neck; ventrolateral stripe pale brown or gray or absent
- 1a. Seven supralabials; black collar indented behind and usually confluent with black dorsolateral areas; ventrolateral stripe, on first scale row below pale lateral stripe, black or brownish with black spots arranged in pairs (one above the other); infralabial sutures not black. *pulchrilatus* (highlands in boreal pine-oak forest)
2. Two black blotches on neck separated by middorsal stripe; ventrolateral stripe pale brown, having small black spots arranged in pairs (one above the other); dorsolateral area, except for spots on neck, mostly uniform brown; infralabial sutures often black. *cyrtopsis* (plateau and adjacent foothills)
- 2a. Black collar indented behind where middorsal stripe terminates; first three scale rows whitish (dark ventrolateral stripe lacking), either mostly uniform, or having small scattered black marks with the largest on the lower edge of the first scale row and the adjacent edge of the ventrals; dorsolateral area mostly uniform brown or with a black-spotted checkerboard pattern; infralabial sutures not black. *collaris* (lowlands and highlands in tropical habitats)

Discussion

The recognition of *pulchrilatus* and *collaris* represents a return to the nomenclature used in the mid to late 1800's. Cope (1885: 173), in a key prefacing the description of *pulchrilatus*, distinguished the previously named *collaris* as having a "lateral stripe not defined below" from *pulchrilatus* as having a "lateral stripe bordered below by a brown stripe." The presence or absence of this dark ventrolateral stripe is one of the principal characters distinguishing *collaris* from *pulchrilatus*. Cope (loc. cit.) also noted that the scales of the first dorsal row were keeled in *collaris* and smooth in *pulchrilatus*, but I am unable to ascribe any taxonomic value to this character. Later, Cope (1887:73) noted that *collaris* was, "Perhaps the same as *E. cyrtopsis*." Cope was the last person to

recognize *pulchrilatus* (1900:1062) and *collaris* (op. cit.:1051), but he misapplied the latter name. Both Boulenger (1893:209) and Ruthven (1908:158, footnote) treated *pulchrilatus* and *collaris* as synonyms in their accounts of *Tropidonotus ordinatus* Var. *eques* and *Thamnophis eques*, respectively. Both *pulchrilatus* and *collaris* have since remained indistinguishable from *eques* (= *cyrtopsis*); Ruthven (op. cit.:162), however, noted that *pulchrilatus* was based upon specimens having seven supralabials, a distinctive feature of *pulchrilatus*.

Study of neotropical garter snakes was revitalized by Smith (1942), who recognized a northern race, *eques cyrtopsis*, and a southern race, *eques eques*. Later, Smith (1951) discovered that the name *eques* is applicable to a different species of garter snake, whereupon the northern race became known as *cyrtopsis cyrtopsis* and the southern race as *cyrtopsis cyclides*. This arrangement has been utilized by subsequent authors. The present study, however, demonstrating that the name *cyclides* has been misapplied, has necessitated reviving the names *pulchrilatus* and *collaris* from the synonymy of *cyclides*, which was a composite of those two forms as visualized by Smith (1942) and Milstead (1953).

The name *sumichrasti* has been linked sub-specifically with *cyrtopsis* (Milstead, 1953: 365). Rossman (1965), however, demonstrated that the name *sumichrasti* has long been misapplied, and is properly identified with a little-known, montane species. None of the specimens examined by me are non-striped or obscurely striped, a pattern ascribed to *sumichrasti*, and many snakes previously referred to *sumichrasti* from southern Mexico are perhaps *T. cyrtopsis collaris*. Specimens examined from Guerrero and Oaxaca and designated as intergrades between *cyclides* and *sumichrasti* by Milstead (1953:370) are herein assigned to *collaris*; he also referred specimens from the city of Oaxaca to *sumichrasti* (op. cit.:368), a locality from which I examined specimens of *collaris*. *Thamnophis sumichrasti* probably is ecologically sympatric with *T. cyrtopsis*; Rossman's comments (loc. cit.) suggest that *T. sumichrasti* and *T. c. collaris* occur together (both from near Zacualtipan, Hidalgo, and Orizaba, Veracruz; see also Ruthven, 1908:163, 165) and that *T. c. pulchrilatus* and *T. sumichrasti* are found in

the same place (both from near Teziutlán, Puebla). In the Mexican highlands, it is not unusual to find several sympatric species of *Thamnophis*; five different kinds of garter snakes can be found together in the Durango pine-oak highlands, and three of them closely resemble one another.

Thamnophis cyrtopsis collaris resembles the population in the Tepalcatepec Valley of Michoacán known as *Thamnophis cyrtopsis postremus*, especially in lacking the dark stripe on the first dorsal row of scales. However, *collaris*, seems to differ from *postremus* (data from Duellman, 1961:116-117) in having more ventrals (average 155.0 and not fewer than 143 in *collaris*; average about 141.5 and not exceeding 151 in *postremus*) and caudals (average 92.5 and no fewer than 76 in *collaris*; average about 71.0 and not exceeding 79 in *postremus*), in having dorsolateral rows of large black spots, instead of small ones (contrast two illustrations in Duellman, *op. cit.*:115, fig. 10A and B), and in having scattered black spots and flecks on the first three, whitish dorsal scale rows (black markings small or usually lacking on first three rows in *postremus*). In the two last-mentioned characteristics, however, some specimens of *collaris* resemble *postremus*. Specimens of *collaris* may have the spots in the dark dorsolateral and pale ventrolateral areas reduced in size and distinctness, the patterns corresponding to remarks concerning *postremus* by Duellman (1961:116), who stated that some specimens have "small dark flecks on the first row of dorsal scales," and by Smith (1942:109), who, in the type description of *postremus*, wrote that the "outer row of dark spots on first and second scale rows [are] greatly reduced, generally scarcely visible." Fouquette and Rossman (1963:197-198) also mentioned the resemblance in pattern of Oaxacan specimens of *T. cyrtopsis* and *postremus*.

The recognition of *pulchrilatus* and *collaris* brings to five the number of subspecies of *Thamnophis cyrtopsis*. These are as follows:

Thamnophis cyrtopsis collaris (Jan)—east and west coast of Mexico in tropical lowlands and highlands.

Thamnophis cyrtopsis cyrtopsis (Kennicott)—southwestern United States and Mexican plateau.

Thamnophis cyrtopsis ocellata (Cope)—Edwards Plateau of central Texas.

Thamnophis cyrtopsis postremus (Smith)—Tepalcatepec Valley of Michoacán.

Thamnophis cyrtopsis pulchrilatus (Cope)—highland mountainous areas in Mexico.

ACKNOWLEDGEMENTS

Field work was financed in part by grants from the Penrose Fund of the American Philosophical Society (1964), and the Bache Fund of the National Academy of Sciences (1961). I am grateful also to Dr. Rollin H. Baker and the Michigan State University Development Fund for defraying field expenses on several summer trips.

For permission to examine specimens, I am indebted to the following individuals and institutions (to which abbreviations refer in the text): Mr. Charles M. Bogert, American Museum of Natural History (AMNH); Dr. Alan E. Leviton, California Academy of Sciences (CAS); Dr. William E. Duellman, University of Kansas Museum of Natural History (KU); Dr. James R. Dixon, Los Angeles County Museum (LACM); Dr. Rollin H. Baker, The Museum, Michigan State University (MSU); Dr. Robert C. Stebbins, Museum of Vertebrate Zoology (MVZ); Dr. Hobart M. Smith, University of Illinois Museum of Natural History (UI); Dr. Doris M. Cochran, United States National Museum (USNM). Specimens designated RGW (field numbers of author) ultimately will be catalogued in the collections at Texas Western College.

For other courtesies rendered, I thank Drs. Edward H. Taylor, Hobart M. Smith, Doris M. Cochran, Ralph W. Axtell, Artie L. Metcalf, Messrs. Roger Conant, Roy A. McDiarmid, and Laurence M. Hardy.

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