

17.

The Synonymy of the Garter Snakes (*Thamnophis*), with Notes on Mexican and Central American Species.

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The accumulation in recent years of relatively large series of garter snakes from Mexico and Central America has made possible a more satisfactory definition of the various species occurring in that area than was possible when Ruthven completed his study of the genus in 1908 (*Bull. U. S. Nat. Mus.*, no. 61). The redefinition of them attempted here has made necessary a re-examination of types and type descriptions, and a number of surprising facts have come to light. While the allocation of names was undertaken chiefly to clarify the synonymy of Mexican garter snakes, all names which have been proposed in or subsequently referred to the genus *Thamnophis* have been allocated. Since these are not available in any one place, they are listed below with original place of description, type locality and present status. The discussions which follow this list concern only those species occurring in mainland Mexico and Central America. Specimen numbers, unless otherwise indicated, are from the U. S. National Museum.

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angustirostris, *Eutaenia*. Kennicott, *Proc. Acad. Nat. Sci. Phila.*, 1860, pp. 332-3. Parras, Coahuila. = *T. rufipunctatus* × *T. melanogaster* hybrid (or = *T. angustirostris*, a valid species).
arabdotus, *Thamnophis*. Andrews, *Zool. Ser. Field Mus. Nat. Hist.*, vol. 20, 1937, pp. 357-8. Catmis, Quintana Roo. = *T. sumichrasti praeocularis*.
atrata, *Eutaenia*. Kennicott, U. S. Pac. R. R. Surv., vol. 12, 1860, p. 296. California. = *T. ordinoides atratus*.
aurata, *Eutaenia*. Cope, *Proc. U. S. Nat. Mus.*, vol. 14, 1892, p. 659. Lake Valley, New Mexico. = *T. eques cyrtopsis*.
Baronis Mülleri, *Tropidonotus*. Troschel, in Müller, *Reisen Ver. Staat., Can., Mex.*, 1865, pp. 610-611. Mexico. = *T. melanogaster canescens*. (Not binomial, therefore not available.)

baronis-mülleri, *Tropidonotus*. Boulenger, *Cat. Snakes Brit. Mus.*, vol. 1, 1893, p. 226. Near Mexico City. = *T. m. melanogaster*.
bipunctatus, *Tropidonotus*. Schlegel, *Essai Phys. Serp.*, vol. 2, 1837, p. 320. Nashville, Tennessee. = *T. sirtalis sirtalis*.
biscutata, *Eutaenia*. Cope, *Proc. Acad. Nat. Sci. Phila.*, 1883, p. 21. Klamath Lake, Oregon. = *T. ordinoides ordinoides*.
bovalli, *Thamnophis*. Dunn, *Herpetologica*, vol. 1, 1940, pp. 191-2. Granada, Nicaragua. = *T. sumichrasti sumichrasti*.
brachystoma, *Eutaenia*. Cope, *Amer. Nat.*, vol. 26, 1892, p. 964. Franklin, Venango Co., Pennsylvania. = *T. butleri*.
brunnea, *Eutaenia elegans*. Cope, *Proc. U. S. Nat. Mus.*, vol. 14, 1892, p. 654. Ft. Bidwell, California. = *T. ordinoides biscutatus*.
butleri, *Eutaenia*. Cope, *Proc. U. S. Nat. Mus.*, vol. 11, 1889, p. 399. Richmond, Indiana. = *T. butleri*.
canescens, *Thamnophis melanogaster*. See below. Chapala, Jalisco.
cerebrosus, *Thamnophis sumichrasti*. See below. Escuintla, Guatemala.
chalceus, *Prymniodon*. Cope, *Proc. Acad. Nat. Sci. Phila.*, 1861, p. 558. Siam, in error. = *T. sauritus chalceus*.
chrysocephala, *Eutaenia*. Cope, *Proc. Amer. Philos. Soc.*, vol. 22, 1885, pp. 173-174. Orizaba, Veracruz. = *T. chrysocephalus*.
collaris, *Tropidonotus*. Jan, *Elenco Sist. Ofidi*, 1863, p. 69. Mexico. = *T. eques eques*.
concinus, *Tropidonotus*. Hallowell, *Proc. Acad. Nat. Sci. Phila.*, vol. 6, 1852, p. 182. Oregon. = *T. sirtalis concinns*.
cooperi, *Eutaenia*. Kennicott, U. S. Pac. R. R. Surv., vol. 12, 1860, p. 296, pl. 15, fig. 1. Cathlapootl and Willpah Valleys, Washington. = *T. ordinoides ordinoides*.
couchii, *Eutaenia*. Kennicott, U. S. Pac. R. R. Surv., vol. 10, 1859, p. 10. Pitt River, California. = *T. ordinoides couchii*.
cyclides, *Thamnophis cyrtopsis*. Cope, *Proc. Acad. Nat. Sci. Phila.*, 1861, p. 299. Cape San Lucas, Baja California, in error. = *T. eques eques*.
cyrtopsis, *Eutaenia*. Kennicott, *Proc. Acad. Nat. Sci. Phila.*, 1860, p. 333. Rinconada, Coahuila. = *T. eques cyrtopsis*.
diguetti, *Tropidonotus*. Mocquard, *Nouv. Arch. Mus. Hist. Nat. Paris*, ser. 4, vol. 1, 1899, p. 327. Mulege and San Ignacio, Baja California. = *T. diguetti*.

- dorsalis*, *Eutaenia*. Baird & Girard, Cat. N. Amer. Rept., 1853, pp. 31-32. Between Monclova and Rio Grande, Texas, in Coahuila. = *T. sirtalis parietalis*.
- eburatus*, *Thamnophis*. Taylor, *Herpetologica*, vol. 1, 1939, pp. 187-189, pl. 19, text fig. 2. Cerro San Felipe, 1700 meters, Oaxaca. = *T. chrysocephalus*.
- elegans*, *Eutaenia*. Baird & Girard, Cat. N. Amer. Rept., 1853, p. 34. Eldorado Co., California. = *T. ordinoides elegans*.
- eques*, *Coluber*. Reuss, *Zool. Misc.*, 1834, pp. 152-155, pl. 8, fig. 2. Mexico. = *T. eques eques*.
- errans*, *Thamnophis ordinoides*. See below. Colonia García, Chihuahua.
- Faireyi*, *Eutaenia*. Baird & Girard, Cat. N. Amer. Rept., 1853, p. 25. Prairie Mer Rouge, Louisiana. = *T. sauritus proximus*.
- flavilabris*, *Eutaenia*. Cope, *Proc. Acad. Nat. Sci. Phila.*, 1866, p. 306. Tableland or southern mountains of Mexico. = *T. macrostemma macrostemma*.
- fulvus*, *Eutaenia cyrtopsis*. Bocourt, *Miss. Sci. Mex., Rept.*, 1893, pp. 777-8, pl. 62, fig. 2. Alta Verapaz, Guatemala. = *T. sumichrasti fulvus*.
- gigas*, *Thamnophis ordinoides*. Fitch, *Univ. Calif. Publ. Zool.*, vol. 44, pp. 69-73, pl. 5, fig. 7, pl. 7, fig. 7. Gadwall, Merced Co., California.
- glaphyros*, *Tropidonotus*. Jan, *Elenco Sist. Ofidi*, 1863, p. 70. North America. = *T. radix*.
- godmani*, *Tropidonotus*. Gunther, *Biol. Centr. Amer., Rept.*, 1894, p. 133. Omilteme, Guerrero. = *T. scalaris godmani*.
- graminea*, *Eutaenia sirtalis*. Cope, *Proc. U. S. Nat. Mus.*, vol. 11, 1889, p. 399. Brookville, Indiana. = *T. sirtalis sirtalis*.
- halophilus*, *Thamnophis*. Taylor, *Herpetologica*, vol. 1, 1939, pp. 183-187, pl. 19, text-fig. 1. Seven kilometers north of Zacualtipan, Hidalgo. = *T. phenax halophilus*.
- hammondii*, *Eutaenia*. Kennicott, *Proc. Acad. Nat. Sci. Phila.*, 1860, p. 322. San Diego and Ft. Tejon, California. = *T. hammondii*.
- Haydenii*, *Eutaenia*. Kennicott, *Expl. Surv. W. 100th Mer.*, vol. 12, pt. 2, 1860, p. 298. Ft. Pierre, Nebraska. = *T. radix*.
- Henshawi*, *Eutaenia*. Yarrow, *Proc. U. S. Nat. Mus.*, vol. 6, 1883, p. 152. Ft. Walla Walla, Washington. = *T. ordinoides vagrans*.
- hueyi*, *Thamnophis ordinoides*. Van Denburgh and Slevin, *Proc. Calif. Acad. Sci.*, ser. 4, vol. 13, 1923, p. 2. Arroyo Encantado, San Pedro Mártir Mts., Baja California.
- hydrophila*, *Thamnophis ordinoides*. Fitch, *Amer. Midl. Nat.*, vol. 17, 1936, p. 648. Trail Creek. Jackson Co., Oregon.
- ibibe*, *Coluber*. Daudin, *Hist. Nat. Rept.*, vol. 7, 1803, pp. 181-3. Carolina. = *T. sirtalis sirtalis*.
- infernalis*, *Coluber*. Blainville, *Nouv. Ann. Mus. Hist. Nat. Paris*, vol. 4, 1835, p. 291, pl. 23, figs. 3-3a. California. = *T. sirtalis infernalis*.
- insigniarum*, *Eutaenia*. Cope, *Proc. Amer. Philos. Soc.*, vol. 22, 1885, p. 172. Chapultepec, Distrito Federal, Mexico. = *T. macrostemma macrostemma*.
- jauresi*, *Tropidonotus*. Duméril & Bibron, *Erp. Gén.*, vol. 7, p. 606. No locality. = *T. sirtalis sirtalis*.
- Kennicotti*, *Tropidonotus*. Jan, *Elenco Sist. Ofidi*, 1863, p. 70. North America. = *T. sirtalis parietalis* (?).
- leptocephala*, *Eutaenia*. Baird & Girard, Cat. N. Amer. Rept., 1853, pp. 29-30. Puget Sound. = *T. ordinoides ordinoides*.
- lineolata*, *Eutaenia elegans*. Cope, *Proc. U. S. Nat. Mus.*, vol. 14, 1892, p. 655. Southern California. = *T. ordinoides vagrans*.
- macrostemma*, *Eutaenia*. Kennicott, *Proc. Acad. Nat. Sci. Phila.*, 1860, p. 331. Mexico City, D. F. = *T. macrostemma macrostemma*.
- marciana*, *Eutaenia*. Baird & Girard, Cat. N. Amer. Rept., 1853, pp. 36-37. Red River, Arkansas [Oklahoma]. = *T. marcianus*.
- megalops*, *Eutaenia*. Kennicott, *Proc. Acad. Nat. Sci. Phila.*, 1860, p. 330. Tucson, Arizona; Santa Magdalena, Sonora. = *T. macrostemma megalops*.
- melanogaster*, *Tropidonotus*. Peters, *Monatsb. Berl. Akad. Wiss.*, 1864, pp. 389-390. Mexico. = *T. melanogaster melanogaster*.
- melanota*, *Eutaenia sirtalis*. Higley, *Trans. Wisc. Acad. Sci. Arts Lett.*, vol. 7, 1889, p. 163. Walworth Co., Wisconsin. = *T. sirtalis sirtalis*.
- melanotaenia*, *Eutaenia radix*. Cope, *Proc. U. S. Nat. Mus.*, vol. 11, 1889, pp. 400-401. Brookville, Indiana. = *T. radix*.
- mesomelanus*, *Tropidonotus*. Jan, *Elenco Sist. Ofidi*, 1863, p. 73. Mexico. = *T. melanogaster melanogaster*.
- multimaculatus*, *Atomarchus*. Cope, *Amer. Nat.*, vol. 17, 1883, p. 1300. San Francisco River, New Mexico, near Arizona Boundary. = *T. rufipunctatus*.
- nigrolateris*, *Eutaenia*. Brown, *Proc. Acad. Nat. Sci. Phila.*, 1889, pp. 421-2. Tucson, Arizona. = *T. marciana*.
- nigrilatus*, *Eutaenia*. Cope, *Proc. U. S. Nat. Mus.*, vol. 14, 1892, p. 665. Tucson, Arizona. = *T. marciana* (emendation of *nigrolateris* Brown).
- obalskii*, *Tropidonotus*. Mocquard, *Bull. Mus. Hist. Nat. Paris*, 1903, no. 5, pp. 211-2. Black Lake, Canada. = *Thamnophis sirtalis sirtalis*.
- obscura*, *Eutaenia sirtalis*. Cope, *Expl. Surv. W. 100th Mer.*, vol. 5, p. 546. Westport, New York; Lacque Parle, Minnesota; Ft. Benton, Montana; California. = *T. sirtalis sirtalis*. The name is here restricted to the five cotypes (U.S.N.M. No. 974) from Westport, New York.
- ocellata*, *Eutaenia cyrtopsis*. Cope, *Bull. U. S. Nat. Mus.*, no. 17, 1880, pp. 22-23. Helotes, Bexar Co., Texas. = *T. eques cyrtopsis*.
- olympia*, *Thamnophis leptocephalus*. Meek, *Zool. Ser. Field Mus. Nat. Hist.*, vol. 1, 1899, p. 235. Olympic Mts., Washington. = *T. ordinoides ordinoides*.
- ordinatus*, *Coluber*. Linnaeus, *Syst. Nat.*, ed. 12, vol. 1, 1766, p. 379. Carolina. = *T. sirtalis sirtalis*.
- ordinoides*, *Tropidonotus*. Baird & Girard, *Proc. Acad. Nat. Sci. Phila.*, 1852, p. 176. Puget Sound. = *T. ordinoides ordinoides*.

- ornata*, *Eutaenia*. Baird, Rept. U. S. Mex. Boundary, 1859, p. 16, pl. 9. Indianola, Texas; Lower Rio Grande, Texas; San Antonio, Texas. = *T. sirtalis parietalis*.
- pallidula*, *Thamnophis sirtalis*. Allen, Proc. Bost. Soc. Nat. Hist., vol. 29, 1899, pp. 64-67. Intervale, New Hampshire. = *T. sirtalis sirtalis*.
- parietalis*, *Coluber*. Say in Long's Exp. Rocky Mts., vol. 1, 1823, p. 186. Stone Quarry on west side of Missouri River, 3 miles above the mouth of Boyer's River. = *T. sirtalis parietalis*.
- phenax*, *Eutaenia*. Cope, Proc. Acad. Nat. Sci. Phila., 1868, p. 134. Córdoba, Veracruz (in error?). = *T. phenax phenax*.
- Pickeringii*, *Eutaenia*. Baird & Girard, Cat. N. Amer. Rept., 1853, pp. 27-28. Puget Sound. = *T. sirtalis pickeringii*.
- plutonia*, *Eutaenia vagrans*. Yarrow, Proc. U. S. Nat. Mus., vol. 6, 1883, p. 152. Arizona. = *T. ordinoides vagrans*.
- postremus*, *Thamnophis eques*. See below. Hda. El Sabino, Michoacán.
- praeocularis*, *Eutaenia*. Bocourt, Le Naturaliste, 1892, p. 278. Belize, British Honduras. = *T. sumichrasti praeocularis*.
- proximus*, *Coluber*. Say, in Long's Exp. Rocky Mts., 1823, p. 187. Stone Quarry on west side of Missouri River, 3 miles above the mouth of Boyer's River. = *T. sauritus proximus*.
- pulchrilatus*, *Eutaenia*. Cope, Proc. Amer. Philos. Soc., vol. 23, 1885, p. 174. Probably Guanajuato. = *T. eques eques*.
- radix*, *Eutaenia*. Baird & Girard, Cat. N. Amer. Rept., 1853, p. 34. Racine, Wisconsin. = *T. radix*.
- rozellae*, *Thamnophis*. Smith, Proc. Biol. Soc. Wash., vol. 53, 1940, pp. 56-57. Palenque, Chiapas. = *T. sumichrasti sumichrasti*.
- rubristriata*, *Thamnophis*. Meek, Zool. Ser. Field Mus. Nat. Hist., vol. 1, 1899, p. 235. Olympic Mts., Washington. = *T. ordinoides ordinoides*.
- rufipunctatum*, *Chilopoma*. Cope, Rept. U. S. Expl. Surv. W. 100th Mer., vol. 5, 1875, p. 544. Southern Arizona. = *T. rufipunctatus*.
- rutiloris*, *Eutaenia*. Cope, Proc. Amer. Philos. Soc., vol. 22, 1885, pp. 388-9. Cozumel Island. = *T. sauritus chalcus*.
- sackenii*, *Eutaenia*. Kennicott, Proc. Acad. Nat. Sci. Phila., 1859, p. 98. Florida. = *T. sauritus sackenii*.
- saurita*, *Coluber*. Linnaeus, Syst. Nat., ed. 12, vol. 1, 1766, p. 385. Carolina. = *T. sauritus sauritus*.
- scalaris*, *Thamnophis*. Cope, Proc. Acad. Nat. Sci. Phila., 1860, p. 369. Jalapa, Veracruz. = *T. scalaris scalaris*.
- scaliger*, *Tropidonotus*. Jan, Elenco Sist. Ofidi, 1863, p. 70. No type locality. = *T. scalaris scaliger*.
- semifasciata*, *Eutaenia sirtalis*. Cope, Proc. U. S. Nat. Mus., vol. 14, 1892, pp. 662-3. Aux Plaines, Illinois. = *T. sirtalis sirtalis*.
- sirtalis*, *Coluber*. Linnaeus, Syst. Nat., ed. 10, vol. 1, 1758, p. 222. Canada. = *T. sirtalis sirtalis*.
- stejnegeri*, *Thamnophis*. McLain, Contr. Neotr. Herp., 1899, pp. 4-5, pl. Salamanca, Guanajuato. = *T. macrostemma megalops*.
- sumichrasti*, *Eutaenia*. Cope, Proc. Acad. Nat. Sci. Phila., 1866, p. 306. Orizaba, Veracruz (in error?). = *T. sumichrasti sumichrasti*.
- taenia*, *Coluber*. Schoepf, Reise Ver. Staat., 1788, vol. 1, p. 496. New York (?). = *T. sirtalis sirtalis*.
- tetrataenia*, *Eutaenia sirtalis*. Cope, U. S. Expl. Surv. W. 100th Mer., vol. 5, 1875, p. 546. Puget Sound, Washington; Pitt River, California. = *T. sirtalis tetrataenia*.
- trilineata*, *Eutaenia sirtalis*. Cope, Proc. U. S. Nat. Mus., vol. 14, 1892, p. 665. Port Townsend, Oregon. = *T. sirtalis concinnus*.
- trivittatus*, *Tropidonotus*. Hallowell, Proc. Acad. Nat. Sci. Phila., 1853, p. 237. Cosumnes River, California. = *T. ordinoides elegans*.
- twiningi*, *Eutaenia radix*. Coues and Yarrow, Bull. U. S. Geol. Surv., vol. 4, pp. 279-280. Two Forks of Milk River, Montana. = *T. radix*.
- vagrans*, *Eutaenia*. Baird & Girard, Cat. N. Amer. Rept., 1853, p. 35. California, in error. = *T. ordinoides vagrans*.
- vicinus*, *Thamnophis*. See below. Temascal, Michoacán.
- vidua*, *Eutaenia infernalis*. Cope, Proc. U. S. Nat. Mus., vol. 14, 1892, p. 658. San Francisco, California. = *T. ordinoides atratus*.

Jan's *Tropidonotus intermedius* (Elenco Sist. Ofidi, 1863, p. 70, and Arch. Zool. Anat. Fis., vol. 3, 1865, p. 209), from unknown locality, was placed, with question, in the synonymy of *marcianus* by Boulenger (Cat. Snakes, vol. 1, 1893, p. 210). This disposition cannot be correct. The snake is described as follows (translation). "This serpent, of unknown provenance, differs principally from *T. natrix*, which it resembles not a little, by having 8 supralabials and 21 series of scales. Behind the head are seen two spots that simulate a kind of collar, and on the body six series of small spots disposed alternately. Both upper and lower labials have a black border on lip; the predominant tint is olive-color above and yellowish below. The specimen examined is 74 centimeters long, of which 14 centimeters and 5 millimeters form the tail." It is inferred from this description that the anal is divided as in *T. natrix*, with which *intermedius* is identical except in the characters mentioned; it is likewise apparent that no light stripes exist in the described specimen (lacking in *natrix*). I believe the name is based upon some species which does not occur in the western hemisphere.

Thamnophis phenax phenax Cope.

The five specimens known of this form are from "Córdoba" (Nos. 30498-9) and "Alpine Region, Orizaba" (No. 7079[3]). I believe the former locality is incorrect, as it is situated at an elevation of some 2,000 ft., in a humid forest zone.

The subspecies is different from all other *Thamnophis* in having the large dorsal

blotches completely crossing the back. One specimen is of great interest, as in it the pattern is partially broken, and shows a stage intermediate between the striped pattern of most species and the singular one of *phenax*. Only the nuchal blotch is single; on the anterior half of the body the blotches are divided medially and alternate with each other, and a very irregular, zig-zag median stripe is made evident; at the middle of the body a median series of blotches, similar to the lateral blotches, becomes evident; and on the extreme posterior part of the body this median series of spots is divided into two, forming a total of four series of alternating spots on the body. An additional series of poorly defined spots occurs on each side, involving the outer two or three rows of scales, but these are visible also in the other specimens of *phenax*. The pattern of this aberrant specimen is highly suggestive of a primitive status for the typical *phenax* pattern, from which the striped patterns, with six series of spots, observable in all other *Thamnophis*, may have been derived.

Scale Counts of *phenax phenax*.

Number	Sex	Scale Rows	Ventrals	Caudals	Supralabials	Infralabials	Proc.	Ptoc.
30499	♀	19-19-17	161	65	8-8	9-9	1-1	3-3
7079	♀	19-19-17	151	60	8-8	11-11	1-1	3-3
7079	♂	17-19-17-15	160	78	7-7	10-10	1-1	3-3
7079	♂	19-19-17	158	76	8-8	9-10	1-1	3-4
30498	♂	19-19-17	158	73	7-7	9-10	1-1	3-3

Thamnophis phenax halophilus Taylor.

In addition to the type, one other specimen is known, from Tequeyutepec, 7 miles west of Jalapa, Veracruz, at 5,600 ft. (No. 110801). It is a male, with 19-19-17 scale rows, 156 ventrals, 71 caudals, 8-8 supralabials, 11-12 infralabials, one preocular, three postoculars. The head has the pattern of *phenax*, with small, parietal spots and most of the remainder of the head light. A pair of large nuchal spots is present, and following these on each side is a double series of very small spots which decrease in size and distinctness posteriorly.

In structural characters and form of body the present form is not distinguishable from *phenax*. It also has the same, peculiar head pattern. The differences between the two are in body pattern; *halophilus* shows but little evidence of spots, while in *phenax* they usually are present, as a single series. A specimen of *phenax* shows a condition intermediate between the two pattern types, however, and accordingly I have little doubt that *halophilus* is properly associated as a subspecies of *phenax*. The trend exhibited by *halophilus*—toward reduction of pattern by subdivision and obsolescence of the spots—is exhibited also by a subspecies of *scalaris* (*godmani*).

Most distinctive of *halophilus* and *phenax* is the peculiar head pattern, by which they easily are distinguished from close relatives.

Thamnophis scalaris Cope.

The most diminutive garter snake in Mexico is *Thamnophis scalaris*, a species distinguished not only by its small size but also by its reduced number of supralabials (normally seven, rarely eight), very small, low loreal, a relatively small eye and head, and the tendency toward formation of a single row of large spots on each side to replace the usual double row. A median stripe is always present, but the lateral stripe is poorly defined or invisible, on the second and third scale rows (or second only) when visible. These characters define a form restricted to high elevations (conifer zone) on the central Mexican plateau.¹

Since the areas to which these snakes are adapted are separated from each other by broad barriers in the form of semi-arid deserts and plains, a gradual divergence in different directions from the presumably

more uniform character of the original stock has taken place in the various isolated populations. As a result three very well defined populations may be distinguished.

Thamnophis scalaris scalaris Cope.

Diagnosis. Supralabials usually seven; eye relatively small; scale rows usually 17-19-15; ventrals 134 to 145 in males, 136 to 145 in females; caudals 69 to 77 in males, 53 to 65 in females; usually a single row of spots on each side at least anteriorly; two vertical light lines, one on nape and one behind eye, enclosing a lateral extension of dorsal head color reaching to upper edge of labials; dorsal stripe splitting the two nape spots, or else a complete transverse light band preceding the fused nape spots.

Specimens Examined. Thirty, as follows: Orizaba (Nos. 7076, 12115-6, 30497), Cruz Blanca (No. 110806, EHT-HMS No. 4989), Mt. Orizaba (FMNH Nos. 1517, 1523), Las Vigas (EHT-HMS No. 27916), Cofre de Perote (EHT-HMS No. 5567), Veracruz; Mt. Orizaba, western side, 10,000 ft. (EHT-

¹ The specimens mentioned by Ruthven (*op. cit.*, p. 129) from Guatemala are not *scalaris* but belong to a subspecies of *sumichrasti* (*fulvus*). They are discussed under the latter name in the following.

HMS No. 5566), *Puebla*; El Chico National Park (EHT-HMS No. 23512), Guerrero (EHT-HMS No. 5568), *Hidalgo*; Mt. Popocatepetl (No. 110815), Lake Zempoala (No. 110816, EHT-HMS Nos. 5299, 5565, 21535), *Mexico*; Tres Cumbres (EHT-HMS No. 4964), Km. 54, 26 kilometers east of Cuernavaca (EHT-HMS No. 4666), *Morelos*. No locality, EHT-HMS No. 23513. Data available also on ANSP No. 11694, Jalapa, Veracruz (Ruthven, *op. cit.*, p. 129), and the type (Cope, *loc. cit.*)

Variation. Usually the spots are in a single series on each side at least anteriorly, but some variation occurs. In certain specimens two rows are visible the entire length of the body (save the nuchal spots), and in some of these the posterior spots become very indistinct. The essential features of the head pattern are the two vertical light bars (one postocular and one on nape) which enclose an extension of the dorsal head color reaching the upper edges of the supralabials; the nape spots are completely separated by the continuation of the middorsal light stripe to the occiput, or else the two nuchal light bars are prolonged and are fused medially in front of the fused nuchal spots.

In some respects the type, as described by Cope, is not exactly typical of the subspecies; among other discrepancies are the 8-8 supralabials. There is, however, no other

known species of *Thamnophis* in that area to which the name may apply. One other specimen with 8-8 supralabials has been seen.

Thamnophis scalaris godmani
(Günther).

Diagnosis. Supralabials usually seven; eye relatively small; scale rows usually not over 17, usually 15 or less in front of anus; ventrals 134 to 158; caudals 61 to 88 in males, 60 to 73 in females; head dark above, the color extending posteriorly to a transverse black line across nape, and posterolaterally to level of angle of mouth.

Specimens Examined. Twenty-six from the states of *Puebla* (San Diego, No. 110810; Laguna San Bernardino (EHT-HMS Nos. 27932-4); Pájaro Verde (No. 110811, EHT-HMS No. 23801); *Oaxaca* (Oaxaca, Nos. 46534, 46604, EHT-HMS Nos. 23774-5; Cerro San Luis, EHT-HMS No. 4997, Cerro San Felipe Summit, EHT-HMS Nos. 15978, 15989); *Veracruz* (above Acultzingo, Nos. 110807-9, EHT-HMS Nos. 5277-9, 5280-1, 27932-4) and *Guerrero* (Omiteme, EHT-HMS Nos. 23779, 23781). Ten other specimens (including the types) are recorded by Boulenger (Cat. Snakes Brit. Mus., vol. 3, 1896, p. 600) from Omiteme, Guerrero, and certain data given.

Description (from No. 46534). Head

Scale Counts in *scalaris scalaris*.

Number	Sex	Scale Rows	Ventrals	Caudals	Supral.	Infral.	Proc.	Ptoc.
1517	♂	17-17-15	138	74	7-7	9-9	1-1	2-2
1517	♂	17-17-15	137	75	7-7	8-8	1-1	3-3
1517	♂	17-17-15	138	75	7-7	8-9	1-1	2-2
7076	♂	17-17-15	142	73	7-7	9-9	1-1	2-3
7076	♂	17-19-15	137	72	7-7	9-9	1-1	3-3
7076	♂	17-19-15	134	76	7-7	8-9	1-1	3-3
11694	♂ ?	17-19-15	138	73	7-7	9-9	1-1	3-3
30497	♂	17-19-15	145	75	7-7	10-10	1-1	3-3
110806	♂	17-19-15	136	77	7-8	9-10	1-1	3-3
4989	♂	17-19-17	138	—	7-8	9-10	1-1	3-3
5568	♂	17-19-17	137	74	7-7	8-8	1-1	3-3
23513	♂	17-19-17	140	73	7-7	9-9	1-1	3-3
5565	♂	19-19-17	133	69	7-7	9-10	1-1	2-3
21535	♂	17-19-15	142	74	7-7	9-9	1-1	3-3
5299	♂	17-19-16	137	70	7-8	10-10	1-1	2-3
23512	♀	17-19-16	145	63	7-7	9-10	1-1	3-3
5567	♀	17-19-15	139	60	7-7	9-9	1-1	3-3
5566	♀	19-19-16	140	58	7-7	9-9	1-1	3-3
110815	♀	17-19-17	144	61	7-7	10-10	1-1	3-3
110816	♀	17-19-17	136	58	7-7	10-10	1-1	3-3
4666	♀	17-19-16	141	—	7-7	8-9	1-1	2-3
4964	♀	17-19-17	140	54	7-7	10-10	1-1	3-3
1517	♀	17-19-16	141	61	7-7	9-10	1-1	3-3
1517	♀	17-19-15	136	65	7-7	9-10	1-1	3-3
1517	♀	17-19-15	140	66	7-7	9-9	1-1	3-3
1517	♀	17-19-15	138	60	7-7	8-8	1-1	2-3
1523	♀	17-19-17	144	61	7-7	9-9	1-1	2-3
7076	♀	17-19-15	145	58	7-8	10-10	1-1	3-3
12115	♀	17-19-15	135	59	7-7	9-9	1-1	3-3
12116	♀	17-19-17	136	53	7-7	9-9	1-1	2-3
Type	♀ ?	?-19-?	143	59	8-8	10-10	1-1	3-3

small, not markedly distinct from neck, short; suture between internasals equal to that between prefrontals; internasals about three-fourths as long as prefrontals, a little over half their area; latter extending far onto sides of head; preocular not in contact with frontal; latter hexagonal, shorter than its distance from tip of snout, more than twice as long as broad; nasal completely divided; loreal small (fused with prefrontal on one side); a single large preocular; three postoculars; temporals 1-2; supralabials 7-7, third and fourth entering eye; eye small, its vertical diameter a third greater than its distance from labial border, less than height of fifth labial; longitudinal diameter of eye (3.1 mm.) over half its distance from tip of snout (5.7 mm.); infralabials 9-10, 4-5 in contact with anterior chinshields; latter shorter and a little broader than posterior chinshields, which are separated medially.

Dorsals in 17-17-16 rows, all of which are keeled; ventrals 147; caudals 64; total length 459 mm., tail 106 mm.

Top of head uniform brown, the color extending onto nape a distance of four scale lengths, where it is bordered by a black, transverse line; lips nearly white, except for black lines along the sutures between the labials; a very distinct, broad black line bordering penultimate labial above and posteriorly; dorsal color extending posterolaterally even with angle of mouth, uninterrupted save by a vague lighter area immediately posterior to penultimate labial; be-

ginning after transverse nape line, a light (brown) vertebral line on middorsal scale row, visible to tail; sides of body brown, of about same shade as top of head, becoming lighter on first and second scale rows, the color disappearing on ends of ventrals; two rows of very small, scarcely distinguishable, alternating spots on each side; the spots of lower row involving the third and fourth scale rows, the upper ones the seventh and eighth scale rows; the spots are more distinct anteriorly than posteriorly. Belly and subcaudal surface dark slate; chin and throat cream; no black ventral marks save on the extreme anterior edges of ventrals (visible only by lifting overlapping portion of preceding ventrals).

Variation. The 25 other specimens examined show scarcely any divergence from the pattern of the described specimen. One, softer than the others, shows the lateral dark spots more plainly. In three the nuchal spots characteristic of *scalaris* and many other *Thamnophis* are visible, being darker than the dorsal head color; in No. 46534 they are fused indistinguishably with the head color. The vertical dark bars are not regularly present on the anterior labials, but a curved line on the edge of the sixth labial is regularly present and the most distinct of all.

The specimen with 19 scale rows has a short series of abnormally small scales intercalated on either side of the vertebral

Scale Counts in *scalaris godmani*.

Number	Sex	Scale Rows	Ventrals	Caudals	Supral.	Infral.	Proc.	Ptoc.
5279	♂	17-17-15	153	76	7-7	10-10	1-1	2-3
46534	♂	17-17-16	147	64	7-7	9-10	1-1	3-3
46604	♂	17-19-17-15	147	—	7-7	10-10	1-1	3-3
110807	♂	17-17-15	145	65	7-7	10-10	1-1	3-3
110808	♂	17-17-15	149	75	7-7	10-10	1-1	3-3
Brit. M.	♂		148	80	7-7			
Brit. M.	♂		146	74	7-7			
Brit. M.	♂		146	81	7-7			
Brit. M.	♂		146	78	7-7			
Brit. M.	♂		149	73	7-7			
Brit. M.	♂		145	81	7-7			
5277	♂	17-17-15	152	76	7-7	10-10	1-1	3-3
5280	♂	17-17-14	158	77	7-7	10-10	1-1	3-3
5281	♂	17-17-15	150	73	7-7	10-11	1-1	3-3
23775	♂	17-17-15	143	65	7-7	10-10	1-1	3-3
23779	♂	17-17-15	142	88	7-7	10-10	1-1	3-4
23774	♂	17-17-15	149	61	7-7	9-9	1-1	3-3
15989	♂	17-17-15	146	65	7-7	10-10	1-1	3-3
5278	♀	17-17-15	151	68	7-8	10-10	1-1	3-3
23781	♀	17-17-15	136	71	7-8	10-10	1-1	3-3
15978	♀	17-18-16	143	63	6-7	10-10	1-1	3-3
23801	♀	17-17-15	143	64	7-7	9-10	1-1	3-3
110809	♀	17-17-11	141	64	8-8	9-10	1-1	2-3
11022	♀	17-17-14	140	57+	7-7	10-10	1-1	3-3
11551	♀	17-17-15	144	60	7-7	9-10	1-1	3-3
Brit. M.	♀		142	66	7-7			
Brit. M.	♀		145	73	7-7			
Brit. M.	♀		134	61	7-7			
Brit. M.	♀		141	—	7-7			
4997	♀	17-17-15	141	—	7-7	9-10	1-1	3-3

row. One specimen has the penultimate and antepenultimate labials mostly fused. The one with 8-8 supralabials owes its higher count to the presence of a small (but complete) labial between the second and third labials.

Comparisons. In scale characters this form is most like *s. scalaris*, but it differs from that by usually having no more than 17 scale rows; typical *scalaris* usually has 19 near the middle of the body. In details of head pattern the two are remarkably and constantly different. Typical *scalaris* has the median light stripe usually extending to the occiput, separating the nuchal blotches; if it does not reach the occiput the light areas bordering the nape spots anteriorly meet dorsally. Also a light, vertical, postocular band extends dorsally, to the supraocular; the dorsal head color extends laterally between this postocular and the nuchal light lines, and terminates abruptly at the upper edge of the supralabials.

Thamnophis scalaris scaliger (Jan).

Diagnosis. Supralabials usually seven; eye relatively small; scale rows usually 19-19-17, never 17-17-15, occasionally 17-19-17, rarely 17-19-15; ventrals 136 to 151 in males, 135 to 150 in females; caudals 51 to 74 in males, 47 to 65 in females; a single row of spots on each side, seldom two rows; spots as a rule larger, more rectangular, than in *s. scalaris*; head pattern as in latter.

Specimens Examined. Seventeen, from Mexico City (No. 12730) and Road between Tacubaya and Desierto de los Leones (EHT-HMS No. 5298), *Distrito Federal*; 15 kilometers west of Toluca (Nos. 110812-4), Toluca (No. 32281), Río Frío (EHT-HMS Nos. 4990, 21524), Llano Grande near Río Frío (EHT-HMS Nos. 23510-11), and 8-10 miles west of Villa Victoria (EHT-HMS

No. 5571), *México*; Mt. Malinche (EHT-HMS Nos. 5569-5570), *Tlaxcala*; Guajuato No. 12675); 2 miles east of Río Frío, *México*, in *Puebla* (Nos. 110817-8); and Nahuatzen (No. 46553), *Michoacán*.

Variation. In cephalic pattern this subspecies is like *s. scalaris*. In general its body pattern also is the same, except that the lateral spots are more frequently large and single.

Comparisons. This form differs from *s. scalaris* primarily in the number of scale rows anteriorly and in front of anus; males may usually have more numerous caudals and ventrals. The race is conceived to have a central area of distribution, away from the periphery of the plateau; *s. scalaris* occupies the eastern escarpment, which for the most part is separated by arid plains from the central area where *s. scaliger* occurs; *s. scalaris* also occurs on the southern edge of the plateau in Morelos and *México*. Further specimens from central *Michoacán* will be necessary to determine whether the Nahuatzen, *Michoacán*, specimen is properly allocated with *s. scaliger*.

The name *scaliger* is applied to the central subspecies of *scalaris* with some question. The scale rows are said to be 19 in the type, which therefore is not the same as *godmani*. However, it is impossible to certainly ascertain which of the other two subspecies the type may represent. The only indication whatever is the statement that the spots are large and "subquadrate." While this statement is applicable to some specimens of typical *scalaris*, on the other hand in general it more clearly describes the central subspecies. Boulenger's description of *scaliger* (Cat. Snakes, vol. 1, 1893, pp. 203-204) is of no assistance, but is apparently a composite based perhaps upon *scaliger* and *godmani* as well.

Scale Counts in *scalaris scaliger*.

Number	Sex	Scale Rows	Ventrals	Caudals	Supralabials	Infralabials	Proc.	Ptoc.
12675	♂	19-17-15	144	56	7-7	9-9	1-1	2-2
12730	♂	19-17-17	151	52	7-7	9-9	1-1	2-3
32281	♂	19-19-17	143	52	7-7	9-9	1-1	3-3
110814	♂	17-19-17	143	51	7-7	9-10	1-1	2-3
5570	♂	19-19-17	140	74	7-7	10-10	1-1	3-3
5571	♂	19-19-17	136	71	7-7	10-10	1-1	2-3
46553	♀	17-19-17	139	57+	7-7	10-10	1-1	3-3
110812	♀	19-19-17	135	47	7-7	9-9	1-1	2-3
110813	♀	19-19-17	138	—	6-7	8-8	1-1	2-2
110817	♀	19-19-17	143	57	7-7	10-10	1-1	3-3
110818	♀	19-19-17	149	62	7-7	8-9	1-1	3-3
5569	♀	19-19-17	146	55	8-8	9-12	1-1	3-3
23510	♀	19-19-17	142	—	7-7	9-9	1-1	3-3
4990	♀	19-19-17	143	58	7-7	10-10	1-1	3-3
23511	♀	19-19-17	150	64	7-7	10-10	1-1	3-3
21524	♀	19-19-17	144	65	8-8	10-10	1-1	3-3
5298	♀	18-19-17	137	49+?	7-7	9-10	1-1	2-2

The three subspecies of *scalaris* may be contrasted as follows:

	<i>scaliger</i>	<i>scalaris</i>	<i>godmani</i>
Posterior scale rows, less than 17	6% (1 in 17)	70% (21 in 30)	100% (18)
Maximum scale rows 19	100% (17)	87% (27 in 31)	6% (1 in 18)
Anterior scale rows 17 ²	12% (2 in 17)	93% (28 in 30)	100% (18)
Caudals in males over 60	33% (2 in 6)	100% (14)	100% (16)
Ventrals in males 143 or more	67% (4 in 6)	7% (1 in 15)	94% (16 in 17)
Infralabials 10 or more on each side	42% (7 in 17)	23% (7 in 31)	72% (13 in 18)

² Some care must be used in determining this character, for the distance on neck in which the scale rows are reduced to 17, in *s. scalaris* and *s. scaliger*, is very short.

This tabulation does not include pattern characters, by which *godmani* can easily be distinguished from the other two. Curiously, no differences of great significance are discernible in the ventral and caudal counts of the females of the three subspecies.

Thamnophis chrysocephalus (Cope).

This is one of the few species of the genus entirely lacking a vertebral light stripe, and the only one that combines this character with 17-15 scale rows. Also characteristic of the species is the very light color of the head, sharply differentiated from the black nuchal area. The lateral stripe has irregular edges and involves the second and third scale rows.

Ordinarily the dorsum, between the lateral stripes, is light brown or brownish-gray, with two series of very poorly defined spots on each side; the spots in the outer series are generally better defined than those of the inner series; posteriorly the spots become entirely indistinguishable; anterior edges of ventrals irregularly marked with black. However, another color phase is represented by the type of *eburatus*, in which the whole dorsum (between the stripes) is dark (black), and the entire venter black. This phase appears to be only a variation, since (1) it occurs in a series of specimens from other localities, one in seven from "Orizaba," and one in three from the vicinity of Acultzingo, Veracruz; and (2) it does not regularly occur in the region of the type locality. Moreover the specimens having the very dark color are otherwise precisely like other specimens with the lighter markings; the differences are only in degree of pigmentation, and do not involve different patterns.

Twenty-three specimens examined are from the following localities. *Veracruz*: Orizaba (Nos. 7077, 30494); above Acultzingo (EHT-HMS Nos. 21536-8; U.S.N.M. No. 110774); Xuchil (F.M.N.H. No. 1519). *Oaxaca*: Cerro San Felipe (EHT-HMS No. 5556); Totontepec (No. 46445); Mt. Zempoaltepec (No. 46446). *Puebla*: Pájaro Verde (Nos. 110775-6). *Guerrero*: Omilteme (Nos. 46342, 47747; EHT-HMS Nos. 23778, 23780, 23782).

Thamnophis vicinus sp. nov.

Holotype. EHT-HMS No. 21539, female, from a locality near Temaxcal, Michoacán, about 20 kilometers east of Morelia, collected by E. H. Taylor, August, 1939. *Paratypes*. Nine, including No. 15897, a topotype, and Nos. 15893-6, 15992-5, from Morelia, Michoacán, all collected by H. Devlin Thomas.

Diagnosis. Similar to *e. eques*, having 19-19-17 scale rows, 149 to 160 ventrals and 77 to 89 caudals; differing from *e. eques* in the complete absence of a middorsal light stripe which is replaced by a series of dark spots, and perhaps in having a smaller size.

Description of Holotype. Head a half wider than neck, somewhat flattened; eye large, its longitudinal diameter (3.2 mm.) three-fourths its distance from tip of snout (4 mm.); full width of rostral visible from above; length of portion of rostral visible from above about half length of internasals; latter about half as wide anteriorly as posteriorly, a little shorter than maximum length of prefrontals; frontal somewhat shield-shaped, a little longer (4.2 mm.) than its distance from tip of snout (3.8 mm.), subequal to length of median suture between parietals, four-fifths maximum length of parietals (5.3 mm.), its width about two-thirds (2.7 mm.) its length; supralabials 7-8, three on one side to a point below middle of eye, four on other; antepenultimate labial slightly the largest; nasal completely divided, naris in anterior section, which is a little higher and a little larger than posterior section; a quadrangular loreal, a little higher than wide; a large preocular, narrowly separated from frontal; three postoculars, more or less subequal in size, the upper two in contact with parietal; temporals 1-2-3, the primary much larger than others. Infralabials 10-10, five in contact with anterior chinshields, two (5th and 6th) with posterior; latter separated from each other medially throughout their length, and divergent posteriorly; posterior chinshields perhaps somewhat longer than anterior, latter a little the wider.

Dorsal scales strongly keeled, except those in outer row, which are weakly keeled; dorsals in 19-19-17 rows, those scales toward middorsum with a single apical notch, none with pits; ventrals 151; anal entire; caudals 77; total length 299 mm., tail 76 mm.

Top of head light slate, this color merging with cream on sides of head and white on lower parts of labials; posterior edges of supralabials with a vertical black line, that on antepenultimate labial most conspicuous; a large, single, black nuchal spot extending laterally two scales below angle of mouth, anteriorly to within one scale length of rictus oris and to posterior margin of parietals, and posteriorly five scale lengths (medially); middorsum of body brown, this color reaching to the third scale row, where it is replaced by a very light brown or cream color; the first scale row and the lower half of the second is gray; on the posterior part of the body the lateral light stripe descends to the first and second scale rows; nowhere is the lateral light stripe sharply defined, and on the anterior third of body it is broken by encroaching black spots and with difficulty can be discerned as a stripe; three series of more or less rounded black spots, none with sharply defined edges, on the body; spots in the median series alternating with those of the lateral series; on the first scale row and lateral edges of ventrals another series of smaller black spots alternating with the lateral spots; latter spots extending to first scale row on anterior fourth of body, but posterior to this part become restricted to the area above the lateral light line; all spots becoming very poorly defined near middle of body, and posteriorly scarcely distinguishable; on the posterior part of the body the dorsum appears almost uniform brown; dorsal surface of tail brown, unspotted.

Ventral surface of head cream; belly and subcaudal surfaces slate, clouded, without distinct black markings.

Variation. The paratypes are very much like the holotype in coloration and scutellation. All completely lack evidence of a middorsal stripe, and the lateral stripes are poorly defined because of encroachment upon them by the lateral dark spots. The middorsal area is occupied by a series of large dark spots. The largest specimen (a male) measures 592 mm. in total length, the tail 155 mm.

Remarks. This species bears a very close resemblance, in coloration, to *chrysocephalus*, with which the specimens at first were associated, without question, until counts were made. These reveal a relationship closer to *eques* than to *chrysocephalus*, since the latter regularly has 17-17-15 scale rows. An examination of the maxilla also shows a closer agreement with *eques*, since the latter (4 specimens) has 24 to 27 teeth, *chrysocephalus* (2 specimens) 29 to 30, and the type of *vicinus* 26. Its chief difference from *e. eques* is the total absence of the middorsal light stripe (a middorsal series of dark spots instead); correlated with this is the reduction of the lateral light stripes.

The total absence of variation in the numerous specimens examined of *eques* with respect to the character of the middorsal stripe leads me to believe that the specimens referred to *vicinus*, even though known from a very small area, are not merely variations from the *eques* norm but represent a distinct population. The uniformity of character of the several specimens of *vicinus* also points to the probable distinctness of that species.

Since *vicinus* is so like *e. eques* from the same area in scutellation, the two might be considered subspecies; this arrangement is not supported, however, by the existence of perfectly typical *e. eques* at exactly the same localities as those in which *vicinus* has been collected. For the present they must be considered distinct species.

It seems that *vicinus* furnishes evidence of a close relationship between *eques* and *chrysocephalus* in the west, and of the derivation of one of these from the other (or from their very close ancestors). There is a southward gradient in the reduction of the median stripe, from *eques cyrtopsis* in the north, with a broad stripe, to typical *e. eques* with a narrow stripe, *vicinus* without a stripe, and *chrysocephalus* on the extreme south, also without a stripe. A similar gradient in reduction of the number of ventrals also is evident. That *vicinus* forms a connecting link in this chain is evident, but evidence that *chrysocephalus* and *eques* actually intergrade is completely lacking, and it is

Variation in Scale Counts of *vicinus*.

Number	Sex	Scale Rows	Ventrals	Caudals	Supral.	Infral.	Proc.	Ptoc.	Temp.
21539	♀	19-19-17	151	77	7-8	10-10	1-1	3-3	1-2-3
15992	♀	19-19-17	149	79	8-8	10-10	1-1	3-3	1-2-3
15895	♀	19-19-17	156	80	8-8	10-10	1-1	3-3	1-2-3/4
15894	♀	19-19-17	152	78	8-8	10-10	1-1	3-3	1-2-3
15993	♂	19-19-17	162	—	8-8	10-10	1-1	3-3	1-2-3
15893	♂	19-19-17	160	84	8-8	10-10	1-1	4-4	1-2-3
15897	♂	19-19-17	161	88	8-8	9-9	1-1	3-4	1-2-3/2
15994	♂	19-19-17	155	84	8-8	10-10	1-1	4-4	1-2-3/4
15896	♂	19-19-17	160	89	8-8	10-10	1-1	3-3	1-2-3
15995	♂	19-19-17	156	86	8-8	9-9	1-1	3-3	1-2-3

assumed that such intergradation does not occur; the completely overlapping ranges bear out this assumption. However, given that orthogenetic trends do exist in this group of the genus, it is not even yet obvious in which direction evolution has occurred; conclusions by Fitch and Ruthven point toward a north-south direction in this case, while various facts mentioned elsewhere in this paper support the opposite view.

Thamnophis eques eques (Reuss).

This form is characterized by having 19 scale rows; median light stripe on body very distinct and occupying no more than a single scale row; lateral light stripes on scale rows two and three; a light head followed by two large, black nape spots (fused or not); belly nearly immaculate; ventrals 146 to 171 in males, 145 to 163 in females; caudals 74 to 104 in males, 68 to 95 in females. It ranges from central Durango and southern Sinaloa southward to the edge of the plateau in Michoacán, west to Hidalgo and central Veracruz; highlands of central

Oaxaca and the Sierra Madre del Sur of central Guerrero.

Thamnophis e. eques can be differentiated from the northern race (*e. cyrtopsis*) by having 166 or fewer ventrals in males (97%, 31 out of 32) while in *e. cyrtopsis* only 14% (3 in 21) have 166 or fewer; in females 100% of *e. cyrtopsis* have 163 or more ventrals, while in *e. eques* 3% (1 in 38) have more than 162 ventrals.

Thamnophis eques, as previously known, shows a north-south trend in (1) reduction of ventral scale counts; (2) reduction of the median stripe and complete restriction of it to the vertebral scale row; and (3) reduction in an average number of supralabials. Most marked of all these trends is the reduction in ventral scale count, which shows a rather abrupt change in central Mexico. The approximate line at which this change occurs does not correspond exactly in position with the zone in which a change in the width of the dorsal stripe occurs; nevertheless, because of the ease of definition of the scale character, this is the one upon which the definition of the two races is

Scale Counts in *e. eques* (females).

Museum	Number	Ventrals	Caudals	Supral.	Infral.	Proc.	Ptoc.	State
FMNH	17110	159	—	8-8	10-10	1-1	3-3	D. F.
USNM	46482	156	91	8-8	10-10	1-1	3-3	Dgo.
EHT-HMS	5282	153	89	7-8	10-10	1-1	3-3	Gto.
USNM	9892	156	91	8-8	10-10	1-1	3-4	"
"	9899	159	68	7-7	9-10	1-1	3-3	"
"	14433	151	68	7-7	10-10	1-1	3-3	"
"	14434	156	85	8-8	10-10	1-1	3-3	"
"	25363	164	73	7-7	10-11	1-1	3-3	"
"	26147	154	91	8-8	10-10	1-1	3-3	"
"	26148	155	—	8-8	10-10	1-1	3-3	"
EHT-HMS	21542	149	79	8-8	10-10	1-1	4-4	Gro.
"	23783	148	78	8-8	10-10	1-1	3-3	"
"	23792	145	79	8-8	11-12	1-1	3-4	"
"	15974	155	70	7-7	10-10	1-1	2-3	Hgo.
"	15985	158	90	8-8	10-10	1-1	3-4	"
"	23776	163	95	8-8	10-10	1-1	3-3	"
"	23785	145	85	7-8	10-10	1-1	3-3	Jal.
"	4998	156	98	8-8	11-11	1-1	2-3	"
"	5080	156	70	7-7	10-10	1-1	3-3	Mex.
"	15975	154	72	7-7	10-10	1-1	3-3	"
"	15890	152	86	8-8	10-11	1-1	3-3	Mich.
"	15891	149	87	8-8	8-10	1-1	3-3	"
USNM	110779	155	—	7-7	10-10	1-1	3-3	"
"	110780	157	71	—	—	—	—	"
EHT-HMS	21525	157	72	7-7	10-11	1-1	3-3	"
"	5276	151	83	8-8	10-10	1-1	3-3	Mor.
"	15977	150	80	8-8	10-10	1-1	3-4	"
USNM	46605	149	80	8-8	10-10	1-1	2-3	Oax.
EHT-HMS	15979	151	80	8-8	10-11	1-1	3-3	"
"	23784	158	81	7-7	10-10	1-1	3-3	"
"	23789	146	82	8-8	9-10	1-1	3-3	"
"	23790	152	77	7-8	9-10	1-1	3-3	"
"	23791	159	—	8-8	10-10	1-1	3-3	"
USNM	46457	150	—	8-8	10-10	1-1	3-3	Sin.
"	46432	160	—	7-7	10-10	1-1	3-3	Ver.
"	25038	149	75	8-8	10-10	1-1	3-3	"
"	30496	153	—	8-8	10-10	1-1	2-4	"
EHT-HMS	15986	152	—	8-8	10-10	1-1	3-4	?

largely based. The reduction in numbers of supralabials from 8 to 7 in the southern specimens is not sufficiently universal to warrant use as a key character to define a southern race. Nevertheless, specimens with 7 supralabials almost invariably belong to the southern race.

While for convenience I have here spoken of "north-south" trends, they should more properly be termed "south-north" trends for in general this is the direction of evolution in *Thamnophis* and especially in this section.

Scale counts have been taken on 104 Mexican specimens of *eques eques* and *e. cyrtopsis*. The scale rows in these are uniformly 19-19-17, except in one from "Orizaba" (with 17-19-15 rows), one from (?) Guanajuato (17-19-17 rows), one from Samachique, Chihuahua (17-19-15), two from Mojá-rachic, Chihuahua (19-19-15, 19-19-16) and one from Chilpancingo, Guerrero (19-19-16). There is no indication that these variations have special significance other than indicating the extremes of variation in the form; the extra scale rows dropped are usually missing only for a very short distance (one scale on one side, six on the other, in one case).

The identity of Reuss' name is not absolutely certain. It has generally been associated with the Mexican form here treated under that name, and at the present, until

the type can be re-examined, there is no alternative. Jan's *collaris* definitely belongs to *e. eques*, however; in it the middorsal light line is only one scale row wide (see Jan and Sordelli, Icon. Gén., livr. 25, pl. 5, fig. 2).

Specimens examined are from the following localities. *Distrito Federal*: Río San Juan de Dios (FMNH No. 17110). *Durango*: Durango (No. 8066); Huasamota (No. 46482). *Guanajuato*: Acámbaro (EHT-HMS Nos. 5282-3); Guanajuato? (Nos. 9892, 9899 [type *pulchrilatus*], 14433-4, 25363, 26147-8). *Guerrero*: 7 miles east of Chilpancingo (EHT-HMS Nos. 21542, 23783, 23786, 23792); Omilteme (EHT-HMS No. 15974); south of Zacualtipan (EHT-HMS Nos. 15985, 23776-7). *Jalisco*: 20 kilometers south of Guadalajara (EHT-HMS No. 23785); Belén (EHT-HMS Nos. 4965, 4998). *México*: Nochitongo Ditch, 30 miles north of Mexico City (No. 19003); San Martín (EHT-HMS Nos. 4968, 5080-1); Villa Victoria (EHT-HMS No. 15975); Zempoala National Park (No. 15973). *Michoacán*: 15 miles east of Morelia (EHT-HMS Nos. 15889-91, 21533-4); Los Reyes (No. 46463); Tacicuaró (Nos. 110777-83, EHT-HMS Nos. 21525-32). *Morelos*: Cuernavaca (EHT-HMS Nos. 5276, 15977). *Oaxaca*: Huajuapam (No. 46605); Summit of Cerro San Felipe (EHT-HMS No. 15979); Oaxaca (EHT-HMS Nos. 23784, 23789-91).

Scale Counts in *e. eques* (males).

Museum	Number	Ventrals	Caudals	Supral.	Infral.	Proc.	Ptoc.	State
USNM	8066	164	—	8-8	10-10	1-1	3-4	Dgo.
EHT-HMS	5283	163	101	8-8	10-10	1-1	3-3	Gto.
"	23786	157	85	7-7	10-10	1-1	4-4	Gro.
"	23788	152	81+	8-8	9-9	1-1	2-3	"
"	23777	161	95	8-8	9-10	1-1	3-4	Hgo.
"	4965	159	99	8-8	10-10	1-1	3-3	Jal.
USNM	19003	164	95	8-8	10-10	1-1	3-3	Mex.
EHT-HMS	4968	166	90	7-7	10-11	1-1	3-3	"
"	5081	159	82	7-7	9-10	1-1	3-4	"
"	15973	162	78	7-7	10-10	1-1	2-2	"
"	15889	157	97	8-8	10-10	1-1	3-3	Mich.
"	21533	171	82	7-7	9-10	1-1	3-3	"
"	21534	158	81	7-7	10-10	1-1	3-4	"
USNM	46463	155	93	8-8	10-10	1-1	3-3	"
"	110777	162	81	7-7	10-10	1-1	3-3	"
"	110778	159	80	7-7	10-10	1-1	3-3	"
"	110781	166	84	7-7	10-10	1-1	3-4	"
"	110782	146	—	7-7	9-9	1-1	2-2	"
"	110783	153	100	8-8	10-10	1-1	3-3	"
EHT-HMS	21526	159	89	8-8	10-10	1-1	3-3	"
"	21527	165	80	7-7	11-11	1-1	3-3	"
"	21528	160	79	7-7	10-10	1-1	2-2	"
"	21529	161	88	8-8	10-10	1-1	3-3	"
"	21530	159	77	7-7	10-10	1-1	3-3	"
"	21531	161	76	7-7	—	—	—	"
"	21532	163	74	7-7	10-10	1-1	3-3	"
USNM	46423	160	99	8-8	10-10	1-1	3-3	Zac.
"	32279	166	76	7-7	8-9	1-1	3-3	?
"	32280	161	78	7-7	10-10	1-1	3-3	?
EHT-HMS	5273	164	104	8-8	9-10	1-1	3-3	?
"	15976	166	—	7-7	10-10	1-1	3-3	?
"	23620	163	—	7-7	8-9	1-1	3-3	?

Sinaloa: Rosario (No. 46457). *Veracruz*: Las Vigas (No. 46432); Mirador (No. 25038); Totalco (EHT-HMS No. 27908); Orizaba (No. 30496). *Zacatecas*: San Juan Capistrano (No. 46423). *No locality*: (Nos. 32279-80; EHT-HMS Nos. 5273, 15976, 15986, 23620). The species has been reported also from Moro León, Guanajuato, and Tezuitlán, Puebla.

Thamnophis eques cyrtopsis
(Kennicott).

This race differs from *e. eques* of the southern part of the Mexican plateau chiefly in the greater average number of ventral scales. In *e. cyrtopsis* 86% of the males have 167 or more ventrals, and 100% of the females have 163 or more ventrals; in *e. eques*, on the other hand, only 3% of the males have 167 or more ventrals, and only 3% of the females have more than 162 ventrals.

In addition, over most of its range *e. cyrtopsis* is characterized by having the middorsal light stripe involving parts of adjacent scale rows on various parts of the body; in *e. eques* the middorsal stripe is always confined strictly to the vertebral scale row. Toward the south specimens of *e. cyrtopsis* have a stripe like *e. eques*, so the ventral count must be relied upon to dis-

tinguish the two races.

Very rarely do 7 supralabials occur in *e. cyrtopsis*, while in *e. eques* 7 occur as frequently as 8.

The range of *e. cyrtopsis* in Mexico is the eastern half of Sonora southward to northern Durango and along the Sierra Madre Occidental to northern Nayarit; eastward through Chihuahua to eastern Coahuila, and southward on the central plateau to southern San Luis Potosí and probably northern Zacatecas.

Specimens of this race have been examined from the following localities. *Chihuahua*: Arroyo del Alamos, Casas Grandes (No. 42876); Basuriachi (FMNH No. 11823); Cajón Bonito Creek (No. 21056); Chihuahua (No. 14256); Guadalupe y Calvo (No. 46356-8); Mojárahic (EHT-HMS Nos. 18962-3, 23063-6, 23787); San Luis Mts. (Nos. 21057-8); Samachique (FMNH Nos. 11822, 11824, 15727). *Coahuila*: 21 miles north of Saltillo (No. 105303); Rinconada (No. 8067, type *cyrtopsis*). *Durango*: Guanacevi (No. 46367). *Nayarit*: Santa Teresa (Nos. 46420-1). *San Luis Potosí*: Hacienda La Parada (No. 46410). *Sonora*: La Posa, 10 miles north of Guaymas (EHT-HMS Nos. 4866-73); Guadalupe Cañon (No. 21059).

Scale Counts of *eques cyrtopsis*.

Museum	Number	Sex	Ventrals	Caudals	Supral.	Infral.	Proc.	Ptoc.	State
FMNH	11823	♀	170	—	8-8	10-10	1-1	2-3	Chih.
USNM	46356	♀	175	81	7-8	10-10	1-1	3-3	"
EHT-HMS	23063	♀	169	84	8-8	10-10	1-1	3-3	"
"	23065	♀	176	95	8-8	10-10	1-1	3-3	"
"	23066	♀	168	86	8-8	11-12	1-1	3-4	"
"	23787	♀	174	90	8-8	11-11	1-1	3-3	"
USNM	21058	♀	167	85	8-8	9-10	1-1	2-2	"
"	46367	♀	172	88	8-8	10-10	1-1	2-3	Dgo.
"	46420	♀	172	84	7-7	10-10	1-1	3-3	Nay.
"	46421	♀	166	84	7-7	10-10	1-1	3-3	"
EHT-HMS	4866	♀	163	78	8-8	10-10	1-1	3-3	Son.
"	4872	♀	171	86	8-8	10-10	1-1	2-2	"
"	4873	♀	166	77+	8-8	10-10	1-1	3-3	"
USNM	42876	♂	177	91	8-8	10-11	1-1	3-3	Chih.
"	21056	♂	169	94	8-8	10-10	1-1	3-3	"
"	14256	♂	172	102	8-8	10-10	1-1	3-3	"
"	46357	♂	174	92	8-8	10-10	1-1	3-3	"
"	46358	♂	174	—	8-8	10-10	1-1	3-4	"
EHT-HMS	18962	♂	174	89	8-8	10-10	1-1	3-3	"
"	18963	♂	169	99	8-8	10-10	1-1	3-3	"
"	23064	♂	173	98	8-8	10-10	1-1	3-3	"
USNM	21057	♂	173	91	8-8	10-10	1-1	3-3	"
FMNH	11822	♂	174	92	8-8	10-10	1-1	3-3	"
"	11824	♂	177	95	8-8	10-10	1-1	3-3	"
"	15727	♂	163	—	—	—	—	—	"
USNM	105303	♂	169	89	8-8	10-10	1-1	3-3	Coah.
"	8067	♂	173	88	8-8	11-11	1-1	2-3	"
"	46410	♂	174	91	7-8	10-10	1-1	3-3	S.L.P.
EHT-HMS	4867	♂	172	91	8-8	11-11	1-1	3-3	Son.
"	4868	♂	169	88	8-8	10-11	1-1	3-3	"
"	4869	♂	163	84	8-8	10-11	1-1	3-3	"
"	4870	♂	171	—	9-10	9-10	2-2	3-3	"
"	4871	♂	172	—	8-8	11-11	1-1	3-3	"
"	21059	♂	164	93	8-8	10-10	1-1	3-4	"

Thamnophis eques postremus
subsp. nov.

Type. E. H. Taylor-H. M. Smith Coll. No. 5275, El Sabino, Michoacán, collected by H. M. Smith. *Paratypes.* Three, Nos. 5274, 5285-6, Uruapan, Michoacán.

Diagnosis. Similar to *e. eques*, except ventrals fewer, 138 to 141 in the only specimens known (4 females); caudals 71 to 72; supralabials 7 to 8; lateral light stripes not apparent; middorsal stripe but very little lighter than ground color, scarcely or not evident; dark spots very much reduced, alternating with each other in two series on either side; middorsum not traversed by spots; outer row of dark spots on first and second scale rows greatly reduced, generally scarcely visible; no distinct dark spots on venter.

Description of Holotype. Length of portion of rostral visible from above a little more than half length of median suture between internasals; latter a little longer than prefrontals, but much narrowed anteriorly, their combined width anteriorly somewhat less than a third the length of the posterior border of the rostral; frontal pentagonal, anterior edge straight, posterior edges forming an obtuse angle of about 110°; length of frontal subequal to its distance from tip of snout and from posterior tip of parietals; nasal divided, nostril largely in anterior section and bordering posterior section; loreal large, nearly square; a large preocular, rather widely separated from frontal; three postoculars, upper a little the largest, lowest smallest and wedge-shaped; temporals 1-3-3, the primary much the largest. Supralabials 7-7, 5th largest, 3d and 4th entering orbit; infralabials 10-10, 5 bordering anterior chinshields, two (5th and 6th) bordering posterior chinshields; length of suture between 1st infralabials subequal to length of mental; anterior chinshields a little shorter and a little broader than posterior chinshields; latter separated from each other their full length.

Dorsal scales in 19-19-17 rows, strongly keeled, those in outer row with relatively weak keels; apical notches present on dorsal scales, but no typical apical pits; ventrals 139; caudals 72; total length 575 mm.; tail

144 mm.; female.

Maxillary teeth 27.

Dorsal surface of head slate gray, unmarked; sides of head the same color, becoming cream at labial border, but posterior borders of all labials with a distinct vertical black streak, most prominent on 5th labial; nape with a large black blotch fading anteriorly into the slate color of head, posteriorly sharply terminating about six scale lengths from edge of parietals; nape spot extending slightly below level of angle of mouth, and somewhat indented on middorsal line.

Ground color of body slate gray, a little lighter than head color; a poorly defined, short area cream in color immediately posterior to dark nuchal spot; a very feebly defined light line on vertebral scale row, very slightly lighter than ground color and lacking darker edges; lateral light stripes not visible but their position on the second and third scale rows indicated by the restriction of dark marks to areas lateral and medial to these rows. Sides of body with two series of small, poorly outlined but distinct, alternating black spots widely separated from each other and not encroaching whatever on the vertebral line or upon the second or third scale row; on the outer, anterior edges of certain scales of the outer row of dorsals is a small black spot; these tend to occur on alternate scales.

Venter cream, immaculate save for a small dark streak near either end of each ventral, placed on the anterior edge and concealed by the overlapping edge of the preceding scale; these small dark marks not visible except when scales are spread apart; chin and gular region cream, unmarked save for a dark streak on the posterior border of a few of the posterior infralabials; subcaudal surface immaculate.

Variation. One of the paratypes is marked exactly like the holotype. Another (No. 5286) has somewhat larger dark spots on the dorsal surface; the corners of the spots nearly touch on either side, but in no case do the spots cross the middorsal line; those in the paravertebral series alternate with each other. The last specimen, a juvenile, agrees with No. 5286 in pattern.

Variation in Scale Counts of *eques postremus*.

Number	5275	5274	5286	5285
Sex	♀	♀	♀	♀
Dorsals	19-19-17	19-19-17	19-19-17	19-19-17
Ventrals	139	138	140	141
Caudals	72	71	72	72
Supralabials	7-7	7-7	8-8	7-7
Infralabials	10-10	10-10	10-10	10-10
Preoculars	1-1	1-1	2-2	1-1
Postoculars	3-3	3-3	3-3	3-3
Temporals	1-3-3	1-3-3	1-3-3	1-3-3
Total length (mm.)	575	571	441	192
Tail length (mm.)	144	141	105	47

In the specimen with 2-2 preoculars the normal preocular is split across the middle; it is a type of anomaly not infrequent in *eques* and its relatives.

Remarks. In the low ventral count, *e. postremus* is like *s. sumichrasti*, *s. praeocularis*, *s. fulvus* and perhaps *s. cerebrosus*. The last and *s. praeocularis* have distinct spots on the belly and distinct, broad vertebral light stripes. In *s. sumichrasti* there is a median series of dark spots alternating with a series of lateral spots, as in *vicinus*. The closest resemblance to *s. postremus* of all these is held by *s. fulvus*, which also lacks belly spots and distinct stripes. In it, however, the middorsal stripe is visible, distinct and relatively broad (one and two half rows to three full rows) on the anterior part of the body, and becomes narrower posteriorly, disappearing completely on the posterior part of the body. In *e. postremus* the dorsal stripe is restricted completely to one scale row (as in *e. eques*) and is of equal indistinctness throughout its length.

Thamnophis sumichrasti sumichrasti
(Cope).

This form is characterized by the absence of a dorsal stripe, presence of a medial series of dark spots, a very poor definition of the lateral light stripes, and by having 19 scale rows and 139 to 157 ventrals, 58 to 72 caudals. In form, scutellation and type of pattern it is undoubtedly a close relative of *eques*, which differs by having a distinct dorsal stripe and higher average ventral and caudal counts. The two are considered as distinct species because there is no evidence whatever of an intergradation between the curious pattern of *sumichrasti*—a median and two lateral series of spots—with that of *eques*, which has a median light stripe and four lateral series of spots. *T. sumichrasti* does intergrade with races which do have patterns similar to that of *eques* (*viz.*, *s. fulvus*, *s. praeocularis*), but from that fact it cannot be inferred that *sumichrasti* must also intergrade with *eques*. For some time I labored under such an inference, but the discovery of *vicinus* has made it evident that intergradation between forms with patterns as different as those of *sumichrasti* and *eques* is not to be taken for granted. *T. vicinus*, with a pattern like *sumichrasti* but with a ventral count

like *eques*, occurs in the same localities as the latter species, yet remains quite distinct. Since it is so close a parallel of *sumichrasti* (differing chiefly in ventral count), I believe it unwise to assume that the latter is a subspecies of *eques*, any more than is *vicinus*.

Thus it appears that there are two centers of dispersal of the complex *eques* group: one in Guatemala, the other in Mexico. The most primitive of the groups may be *vicinus* and *s. sumichrasti*, respectively, each of which has given rise to striped forms some of which closely parallel each other (*e.g.*, *e. postremus* and *s. fulvus*). The chief difference between the history of the forms developing from these two centers of dispersal is that *vicinus* has become completely distinct from its striped derivative, *eques*, while *sumichrasti* still remains linked with its striped derivatives. Chiapas specimens of *sumichrasti* show definite evidence of intergradation of that form and *s. fulvus*.

In spite of evidence of separate centers of dispersal for *sumichrasti* and *eques*, the two species obviously have had a common origin, and *chrysocephalus* seems very near the ancestral type from which they were derived. *T. chrysocephalus* shows a strong similarity to *vicinus*, differing chiefly in number of scale rows and maxillary teeth.

The two cotypes of *sumichrasti* are very small and soft. They completely lack stripes, however, and have a series of spots crossing the vertebral scale row. Moreover they have 19 scale rows (19-19-17) and the low ventral and caudal counts typical of the subspecies. They may actually have been secured near Orizaba, as stated by Cope, but it appears more probable that they were collected on the Isthmus of Tehuantepec, on the Atlantic slopes. At best the locality data cannot be relied upon until verified by further specimens from the region of Orizaba, for in numerous instances the data for Sumichrast's specimens are known to have been misrepresented.

The name *sumichrasti* has previously been applied to a 17-scale-rowed form (*chrysocephalus + scalaris godmani*) and for this reason Dunn and I nearly simultaneously applied different names to the stripeless, 19-scale-rowed form to which actually belongs the name *sumichrasti*. These three names (*sumichrasti*, *bovalli*, *rozellae*) clearly refer to the same form.

Scale Counts of *s. sumichrasti*.

Museum	Number	Sex	Scale Rows	Ventrals	Caudals	Supral.	Infral.	Proc.	Ptoc.
USNM	25234	♀	19-19-17	149	66	8-8	10-10	1-1	3-3
USNM	26501	♂	19-19-17	157	63	8-8	9-9	1-1	3-3
USNM	26502	♂	19-19-17	148	68	8-8	8-8	1-1	3-3
USNM	46549	♀	19-19-17	139	72	8-8	9-10	1-1	3-3
USNM	108597	♀	19 (20)-19-17	140	58	7-7	9-9	1-1	3-4
USNM	108598	♂	19-19-(15)17	148	—	8-8	9-9	1-1	3-3
USNM	108599	♂	19-19-15	151	—	7-7	9-9	1-1	3-4

The localities now represented by specimens are: *Tabasco*: Montecristo (USNM No. 46549). *Veraacruz*: ?Orizaba (USNM Nos. 26501-2). *Chiapas*: Palenque (USNM No. 108597); Aguacate, 24 kilometers north of Palenque (USNM No. 108598-9). *Guatemala*: (USNM No. 25234). *Nicaragua*: Granada (Dunn, *loc. cit.*)

Thamnophis sumichrasti praeocularis
(Bocourt).

The types of *praeocularis* are described with 140 ventrals, 68 to 74 caudals, and 19 scale rows. The type of *arabdotus* (FMNH No. 26994) has 140 ventrals, 72 caudals, and 19-19-17 scale rows (female). Two females in the U. S. National Museum (Nos. 46528-9) from Puerto Morelos, Yucatán, have 137 and 136 ventrals, respectively; caudals 70, 71; scale rows 19-17-15, 19-19-16. The patterns in all these specimens are remarkable alike, including a very broad median stripe; large nuchal blotches followed by smaller blotches on the body, of which a few anterior are fused to form single lateral cross-bands; and a series of black spots on each side of venter, a spot to the side of each ventral. This uniformity in pattern, as well as in most features of scutellation, leads me to believe that the presence of three preoculars in the types (both?) of *praeocularis* is an anomaly; there is no other feature which could distinguish them from *arabdotus* as another species or subspecies.

Thamnophis sumichrasti cerebrusus*
subsp. nov.

Holotype. U. S. Nat. Mus. No. 12734, female, Escuintla, Guatemala, collected by H. J. Stuart. *Paratypes*. U. S. Nat. Mus. No. 12735, topotype; F.M.N.H. No. 410, "Guatemala."

Diagnosis. Dorsal stripe covering one and two half scale rows, with continuous lateral edges; lateral stripe poorly defined or absent; two regular rows of dark spots on venter, at least toward posterior part of belly; head light above, with discreet vertical dark marks on edges of supralabials; ventrals 144 to 167. Scale rows regularly 19-19-17.

Description of Holotype. Internasals a little shorter than wide, their combined contact with rostral considerably greater than a nasorostral suture; prefrontals a little longer than internasals; frontal very slightly shorter than its distance from tip of snout or length of parietal suture; greatest width of frontal four-fifths its length, least width about half its length; one loreal, about as high as long; a large preocular; three post-

oculars, lower smallest; temporals 1-3, anterior very large; supralabials 7-7, 3d and 4th entering eye, 5th highest and largest; ten infralabials, five in contact with anterior chinshields, two with posterior; posterior chinshields separated from each other, a third longer than anterior chinshields.

Dorsal scales in 19-19-17 rows, all strongly keeled except those of outer row, which are weakly keeled; ventral 144; anal divided; subcaudals 66 (female).

Head very light brown; two small, white pineal spots; posterior edges of 2d to the 5th supralabials inclusive black-edged, the anterior scales less prominently; otherwise head without markings. Two dark nuchal blotches partially fused medially; a very distinct, sharply outlined middorsal light stripe covering one and two half scale rows, extending from nape onto tail; below this two series of alternating spots on each side, the lower reaching to and including the upper part of the third scale row; irregular dark areas on many scales of the three outer rows. Belly light, with small, black spots near the anterior end of each ventral, arranged in a series on each side, near ends of ventrals; other scattered dark spots and irregular dark areas near bases of many ventrals, especially those near middle of body; chin with a very few, tiny dark flecks below.

Variation. The topotypic paratype has an anomalous pattern, and the head scutellation is not normal. Apparently it should have 7-8 supralabials, as the outlines of the scales indicate this number, but they are so fused that only six remain on each side. In scutellation it is otherwise normal, and has 10-10 infralabials, 1-1 preoculars, 3-3 postoculars, 19-19-17 scale rows, 149 ventrals and 74 caudals (male). The head shows no markings whatever. The body lacks all pattern characters save the middorsal stripe, which is narrower than in the type (involves only the edges of the paravertebral rows) and black-bordered; there are flecks of black on some lateral scales, and the nuchal blotches are indicated by black flecks on certain nuchal scales; the belly is unspotted.

The Field Museum paratype has 167 ventrals, 78 caudals, 7-7 supralabials, 10-10 infralabials, 1-1 preoculars and 19-19-17 scale rows. It is like the holotype, except that the pattern is less well defined (scales not spread apart as in holotype); the anterior spots are fused together, reproducing more or less the lateral neck pattern of *praeocularis*; and the rows of spots on the belly are shorter and the spots smaller.

Comparisons. This form appears to be most closely related to *praeocularis*, having

* *Light-headed*, in reference to the relatively light ground color and poorly defined dark marks on head.

a very similar body pattern. The most distinctive pattern differences are found on the head. In *praeocularis* the dorsal surface of the head is dark, the lips are strongly barred, and the nuchal blotches are fused with the head color. The ventrals are a little less numerous than in *cerebrosus*, varying from 136 to 140 in four specimens (females). Whether there will prove to be average differences in neck pattern cannot now be stated; in *praeocularis* the first few body spots are single, instead of double and alternating, and cross the lateral light stripe; this pattern does not occur in the type of *cerebrosus*, but does in the single normal paratype. It is also possible that the number of supralabials in *cerebrosus* may average fewer than in *praeocularis*.

Thamnophis sumichrasti fulvus
(Bocourt).

This rather well-defined form is characterized by the indistinctness of the dorsal stripe, which is poorly defined and about one scale row wide (except sometimes on the neck); the head generally is light, and always with no or very discreet dark labial marks; dark marks on the belly, as in *praeocularis* and *cerebrosus*, are completely lacking; scale rows 19-19-17 (a short row medially on each side, increasing the count to 21, in one specimen out of 32; one other specimen with 15 posteriorly); supralabials regularly 8-8; ventrals 136 to 153; caudals 58 to 76.

The subspecies is known only from central Guatemala. Specimens examined are from Sierra Santa Elena, Tecpam, 9500 ft. (FMNH Nos. 1926, 30432-3) and Chichivac, Chimaltenango (FMNH Nos. 20261-2, 20275). Slevin (Proc. Calif. Acad. Sci., ser. 4, vol. 23, 1939, p. 397) records 26 specimens from Chichivac, in the vicinity of Tecpam (CAS Nos. 66983-98); Lake San Antonio, near San Antonio (CAS Nos. 66983-98); and Finca El Potrero, Volcán Agua (CAS No. 66973). The race may exist in Chiapas. Apparently it occurs only at relatively high elevations, while *cerebrosus* and *praeocularis* are lowland and foothill subspecies.

The closest relative of *fulvus* is not *praeocularis* or *cerebrosus*, which are closely associated geographically, but more probably *sumichrasti*. With the latter *fulvus* agrees in head pattern (no dark labial marks), ventral pattern (no spots) and in scale counts; the only significant difference between these two is in the presence of stripes (although dim except on neck) in *fulvus*, the absence of them in *sumichrasti*. This difference, though slight, is very constant in the specimens examined.

Thamnophis ordinoides errans
subsp. nov.

Holotype. USNM No. 46336, female, from Colonia García, Chihuahua. *Paratypes*. Three topotypes, Nos. 46337-9, and two from Coyotes, Durango (FMNH Nos. 1499A-B).

Diagnosis. A member of the *ordinoides* group, with 19-19-17 scale rows and maxillary teeth 17 or 18, the posterior not conspicuously enlarged, although a little longer than the anterior teeth; ventrals 155 to 166 (155-156, females; 163-166, males); caudals 72 to 91 (72 to 82, females; 85 to 91, males); supralabials seven or eight; sixth labial large and not narrowed above; stripes very poorly defined as a rule, median stripe generally covering but one scale row where visible; spots between stripes small, those of the outer row usually very poorly defined or absent; top of head dark, the color extending onto sides; supralabial region light, except for black posterior edges on most of the labials; a vaguely darker, longitudinal line through lower temporal region.

Description of Holotype. Portion of rostral visible from above as long as internasal; suture of one of latter with rostral as great as naso-rostral suture, or a little longer; one preocular; three postoculars; temporals 1-2-3; eight supralabials on one side, on the other side the two subocular labials fused; anterior and posterior edges of 6th labial parallel, inclined forward slightly; 6th labial a little higher than long; ten infralabials; posterior chinshields separated from each other, a little longer than anterior chinshields.

Scale Counts of *s. fulvus*.³

Number	Sex	Scale Rows	Ventrals	Caudals	Supral.	Infral.	Proc.	Ptoc.
20261	♂	19-19-15	146	69	8-8	10-10	1-1	3-3
20262	♂	19-19-17	145	75	8-8	10-10	1-1	3-3
1926	♀	19-19-17	136	—	8-8	9-10	1-1	3-3
20275	♀	19-19-17	142	60	8-8	10-11	1-1	3-3
30432	♀	19-19-17	144	59	8-8	10-10	1-1	3-3
30433	♀	19-21-17	142	58	8-8	10-11	1-1	3-4

³ See Slevin (*loc. cit.*) for counts on the 26 specimens in the California Academy of Sciences.

Scale rows 19-19-17, the fourth row dropping at the 104th ventral; ventrals 156; anal entire; caudals 82, total length 545 mm.; tail 139 mm.

Dorsal surface of head uniform dark brown, the color extending onto sides, without marks; labial region cream; an area on posterodorsal edge of labials (except last) black; loreal, nasal, two lower postoculars and lower half of preocular suffused with cream; temporal region dark, nearly black at sutures with labials, abruptly differentiated from light labial color; posterior to temporal region and parietals, the brown color of head shades into a black nuchal patch extending posteriorly four scale lengths, this patch extending laterally a little below angle of mouth, and sharply differentiated posteriorly and below from the adjacent light color. Dorsal ground color brown, lighter brown below middle of third and on vertebral scale rows; on neck a single, poorly defined series of transversely elongate spots; this series breaks into two rows, and the lower of these rows disappears on anterior fourth of body; the median series of spots continues about to middle of body, there disappearing; on posterior third of body no markings whatever are visible, and only the lighter ground color below the middle of the third row indicates the position of the lateral light stripe. Tail uniform brown. Chin and gular area cream, unmarked; otherwise entire ventral surface slate gray, the posterior edges of the scales light.

Variation. In coloration the subadult male and one juvenile topotype are just like the holotype; the other juvenile topotype has the spots in the outer row more clearly defined, visible (though dimly) to the tail. All agree with the type in having the naso-rostral suture much smaller than the combined internasal-rostral sutures.

The two paratypes from Coyotes, Durango, differ in coloration from the topotypes only in the greater distinctness of the dorsal stripe. In the larger the stripe is distinct the full length of the body, and involves the inner halves of the paravertebral scale rows; it divides the nuchal blotches and reaches the parietals. In the smaller

specimen the stripe is only one scale row wide, but it is distinct posteriorly as well as anteriorly. There are no markings below the vaguely indicated lateral light line.

Remarks. These are the first specimens recorded from mainland Mexico (*i.e.*, exclusive of Baja California) of the *ordinoides* group. They differ from all except *ordinoides*, *atratus*, and *hydrophila* by having a maximum of 19 scale rows. Of these, *ordinoides* has fewer ventrals and caudals; *atratus* has a distinct dorsal stripe and frequently has red in the dorsal color; and *hydrophila* regularly has eight labials, the sixth narrower above than below, and the combined internasal-rostral sutures less than a single naso-rostral suture (these characters from Fitch, *Univ. Calif. Publ. Zool.*, vol. 44, 1940).

Of known Mexican species, the one most easily confounded with *errans* is *eques eques*, a form having similar scutellation at least in the southern part of its range. The latter may be distinguished by the presence of dark spots below the lateral light line (on the scales); by the distinct lateral light line; and by the number and character of the maxillary teeth. Two *eques eques* examined (from the states of Sonora and Mexico) have 24 and 26 maxillary teeth, and the last is much larger (two or three times) than the anterior and middle teeth. Two *errans* (one from each locality) have 17 and 18 maxillary teeth, and the posterior is but little larger than the middle and anterior teeth; these maxillae resemble one extracted from a specimen of *ordinoides vagrans* from Rinconada, New Mexico (USNM No. 44361), with 20 teeth, the last but little enlarged.

The relationships and phylogenetic position of *errans* are not clear, and cannot well be guessed until more specimens show the type of variation that exists in it. The resemblance to *eques* is so close that the possibility of its derivation from the latter should be considered; if such is the case, then *errans* would have to be looked upon as the most primitive of the *ordinoides* group; this is the view here considered the most probable. According to Fitch's theories,

Scale Counts in *ordinoides errans*.

Number	46336	46339	46337	46338	1499	1499
Sex	♀	♀	♂	♂	♂	♂
Scale Rows	19-19-17	19-19-19	19-19-17	19-19-17	19-19-17	19-19-17
Ventrals	156	155	166	163	156	158
Caudals	82	72	91	85	90	91
Supralabials	8(7)-8	7-8	7-7	7-7	7-7	7-7
Infralabials	10-10	10-11	10-10	10-11	10-10	10-10
Preoculars	1-1	1-1	1-1	1-1	1-1	79
Postoculars	3-3	3-3	3-3	3-3	3-3	1-1
Total length (mm.)	545	214	437	242	610	2-2
Tail length (mm.)	139	51	117	68	159	300

however (and Ruthven's), *errans* probably would be considered one of the end forms of the artenkreis, paralleling the *ordinoides* section in its reduced scutellation and broad snout.

***Thamnophis sirtalis parietalis* (Say).**

A specimen collected by Nelson and Goldman at Casas Grandes, Chihuahua (USNM No. 46371), is the only specimen of this species known from Mexico. It is a female with 19-19-17 scale rows, 152 ventrals, tail incomplete, supralabials 7-7, infralabials 10-11, preoculars 1-1, postoculars 3-3. The spots in the upper row are fused together, and those in the lower row are confluent with the upper row but not with each other; the spaces between the latter are red.

***Thamnophis marcianus*
(Baird & Girard).**

This species is characterized by having a distinct lateral light stripe confined to the third row of scales; the only other having a similar disposition of the lateral stripe is *ruthveni*. In the latter, however, the mid-dorsal stripe involves only the vertebral scale row; in *marcianus* it covers the adjacent halves of the paravertebral rows as well. In addition the ventrals in *ruthveni* are generally fewer.

In body pattern, particularly in the neck region, this species as well as *ruthveni* shows a much greater similarity to the *eques* group than it does to *megalops*.

The forty-seven specimens examined are from the following localities: *Sonora*: (No. 7235); *Chihuahua*: Ojos del Diablo, Santo Domingo Ranch (No. 30837); 16 leagues north of Guerrero (No. 46583); 10 miles north of Ciudad Delicias (No. 105293); Progreso (near Casas Grandes) (Nos. 104634-41); 5 miles south of Ciudad Juárez

(EHT-HMS No. 5418); Río San Pedro, betw. Chihuahua City and Naica (EHT-HMS Nos. 5319-22, 5419, 5421-3). *Durango*: 5 miles north of Conejos (EHT-HMS No. 5420); between Lerdo and La Goma (No. 109295). *Coahuila*: 2-3 miles east of Torreón (EHT-HMS No. 4996); Santa Helena Canyon, Río Grande (FMNH No. 26135). *Nuevo León*: Mamulique Pass (EHT-HMS No. 5287); Sabinas Hidalgo (EHT-HMS No. 28653); 8 miles W. of Monterrey (EHT-HMS No. 23615). *Tamaulipas*: Matamoras (Nos. 861, 5491, 15344); Charco Escondido (No. 1849); Rancho El Plato, 38 miles southeast of Reynosa (No. 95183). Garman (*Bull. Essex Inst.*, vol. 19, 1887, pp. 7-8) records the species from "San Luis Potosí," but the record appears to be in error.

***Thamnophis ruthveni* Hartweg & Oliver.**

Similar to *marcianus*, having the lateral stripe confined to the third scale row, but differing in having a narrow middorsal stripe covering only the vertebral scale row (one and two half rows in *marcianus*), and generally by having fewer ventrals (147 to 154 in males, 141 to 150 in females; *marcianus* has 151 to 165 in males, 144 to 159 in females). It is known only from the Pacific side of the Isthmus of Tehuantepec, where it has been taken near Tehuantepec, at Chivela, and at San Mateo del Mar, state of Oaxaca.

Two specimens examined are from Tehuantepec (No. 110802) and Chivela (No. 46364). Both are males, and respectively have 21-21-17, 21-21-16 scale rows; ventrals 153 in both; caudals ?, 71; supralabials 8-8, infralabials 10-10, preoculars 1-1, postoculars 4-4, a minute anterior temporal in each. Three other specimens (EHT-HMS Nos. 27562-4) are from Tehuantepec.

Scale Counts of *marcianus*.

Number	Sex	Scale Rows	Ventrals	Caudals	Supral.	Infral.	Proc.	Ptoc.
28653	♀	21-21-17	150	65	8-8	10-10	1-1	4-4
5491	♀	21-21-17	146	—	8-8	10-10	1-1	3-4
849	♀	21-21-17	144	—	8-8	10-?	1-1	4-4
7235	♀	21-21-17	153	67	8-8	10-10	1-1	4-4
26135	♀	21-21-17	150	—	8-8	10-11	1-1	3-3
30837	♀	21-21-17	150	—	8-8	9-10	1-1	4-4
46583	♀	21-21-17	148	—	8-8	10-10	1-1	4-4
104635	♀	21-21-17	157	66	8-8	9-10	1-1	3-3
104637	♀	21-21-17	154	62	8-8	9-9	1-1	3-3
104639	♀	21-21-17	156	—	—	—	—	—
104640	♀	21-21-17	156	—	8-8	9-10	1-1	3-3
104641	♀	21-21-17	156	—	8-8	9-10	1-1	3-4
105293	♀	21-21-17	155	69	8-8	10-11	1-1	3-4
105295	♀	21-21-17	154	—	8-8	10-10	1-1	3-4
15344	♂	21-21-17	151	76	8-8	10-10	1-1	3-4
95183	♂	21-21-17	153	78	8-8	9-10	1-1	4-4
104634	♂	21-21-17	162	—	7-8	10-10	1-1	4-4
104636	♂	21-21-17	165	72	8-8	10-10	1-1	4-4
104638	♂	(19)21-21-17	160	70	8-8	9-9	1-1	3-4

***Thamnophis macrostemma macrostemma* (Kennicott).**

As stated previously (Smith, *Zool. Ser. Field Mus. Nat. Hist.*, vol. 24, 1939, pp. 29-30), this species cannot stand as *megalops*; if the latter name is to be used, it must be for a subspecies of *macrostemma* (since it is not based upon a distinct species) for Cope (*Bull. U. S. Nat. Mus.*, No. 1, 1875, p. 41) chose the latter as the name for the species.

It seems that *macrostemma* is composed of one or more populations differing to some extent from each other. Nevertheless I am not certain that the differences previously pointed out by me (*loc. cit.*) between northern and southern specimens actually differentiate two populations, instead of merely expressing a lack of specimens from territories intervening between the two geographical extremes. Specimens from certain localities in such intermediate territory which have been studied more recently do turn out to be intermediate, and thus is supported a possibility that the variation in ventral and caudal counts exhibits a definite south-north trend independent of the variation in other characters, such as color, that may actually define several true populations in the species. That color characteristics may define geographic races in this species has been emphasized by Ruthven (*op. cit.*) and more recently by Brumwell (*Trans. Kans. Acad. Sci.*, vol. 42, 1939 [1940], pp. 423-429, pl. 1). The difficulty of analyzing color differences upon the basis of only preserved specimens has made impractical a further study of this aspect of the problem at the present time.

However, despite certain doubts in my own mind of the validity of such a separation, the recognition of a northern and a southern race of *macrostemma* based upon differences in ventral and caudal counts is still statistically sound.

In caudal counts of males, 93% of *m. macrostemma* have 78 or less, while 91% of *m. megalops* have 79 or more; in females 94% of *m. macrostemma* have 68 or less, while 95% of *m. megalops* have 69 or more. In ventral counts of females 85% of *m. macrostemma* have 185 or less, while 54% of *m. megalops* have 159 or more; the over-

lap in males is practically complete. In total counts of males, 86% of *m. macrostemma* have 242 or less, while 95% of *m. megalops* have 243 or more; in females of *m. macrostemma*, 79% have 225 or less, while in *m. megalops* 89% have 226 or more.

Specimens recently examined add further data for the table of variation previously published.

The following distributional records are available. *Nayarit*: Santa Teresa; Tepic. *Jalisco*: Atemajac; Chapala; 20 km. south of Guadalajara; Guadalajara; La Quemada; Magdalena; Ocotlán. *Michoacán*: Lake Cuitzeo; Pátzcuaro; Zamora; Tacicuaró. *México*: Chalco; Chimalhuacán; Lerma; San Pedro Tultepec; Toluca; Nevado de Toluca; 7-10 miles west of Villa Victoria. *Distrito Federal*: Chapultepec; Xoyoacán; La Viga Canal; Mexico City; Xochimilco. *Puebla*: Atlixco; Puebla; Tecamachalco. ⁴*Veracruz*: Acatenó; Mirador; Orizaba. *Oaxaca*: Mitla.

The specimens from the vicinity of Lake Chapala and La Quemada are intermediate in character between the two races, and were not included in the comparisons given above. For data on variation in these specimens see Brumwell, *op. cit.*

***Thamnophis macrostemma megalops* (Kennicott).**

The following distributional records in Mexico are available. *Chihuahua*: Chihuahua; Colonia Juárez; Jiménez; Miñaca; San Andrés; Río San Pedro between Naica and Chihuahua City; Progreso, near Casas Grandes (on Río Santa María); Casas Grandes; Colonia García; Santa Rosalía; Sierra Madre. *Sonora*: Santa Magdalena (Tuscon Ariz.?). *Durango*: Ada Magdalena; Coyotes; Durango; El Salto; Río Tunal, above Pueblito; Lerdo. *San Luis Potosí*: Hda. La Parada. *Guanajuato*: Guanajuato; Irapuato; Moro León; Salamanca; Tupátaro (this may be one of the towns of the same name in the state of Michoacán); Celaya. *Hidalgo*: La Vega, Mizquiahuala, Valle de Mezquital (Martín del Campo, *Anal. Inst. Biol. Mex.*, vol. 8, 1937, p. 264).

⁴ Localities in this state probably incorrect.

Variation in Scale Counts of *Thamnophis macrostemma*.

Race	Sex	Caudals			Ventrols			Totals		
		No. Spec.	Range	Av.	No. Spec.	Range	Av.	No. Spec.	Range	Av.
<i>m. megalops</i>	♂	23	77-89	82	32	159-172	165	20	242-255	248
<i>m. megalops</i>	♀	22	68-89	74	30	149-164	157	18	222-260	235
<i>m. macrostemma</i>	♂	43	65-81	74	53	129-169	164	42	226-245	237
<i>m. macrostemma</i>	♀	33	61-71	66	48	150-171	158	33	210-228	221

***Thamnophis sauritus proximus* (Say).**

Mexican specimens examined since 1938 (Smith, *Occ. Papers Univ. Mich. Mus. Zool.*, No. 388, 1938, pp. 5-7) are from 60 miles south of Matamoros, Tamaulipas (FMNH No. 27183); Hda. La Clementina, Tamaulipas (No. 105305); and Acultzingo, Veracruz (Nos. 110803-4). These have 165, 160, 159, 160 ventrals, respectively; caudals 94+? (♂), 102+ (♂), 97 (♂), 98 (♀). The Acultzingo record must represent nearly the extreme southern edge of the range of the subspecies, as at about the same parallel *chalceus* occurs on the coast.

***Thamnophis sauritus chalceus* (Cope).**

The range of this subspecies is from central Veracruz to Costa Rica. To the localities mentioned by Dunn (*Herpetologica*, vol. 1, 1940, pp. 192-3) and Smith (*op. cit.*, pp. 5-6, pl. 1) can be added Jonuta (No. 110805) and Montecristo (No. 46584), *Tabasco*; Puerto Morelos (No. 46530) and Cozumel Island (No. 13906), *Yucatán*; Cobá (FMNH No. 26972), *Quintana Roo*; San Gerónimo (FMNH No. 1459), *Oaxaca*; and Potrero Viejo (EHT-HMS No. 5272), *Veracruz*.

***Thamnophis melanogaster melanogaster* (Peters).**

It seems not to have been generally recognized that eastern specimens of this very distinct species are the only ones with a broad, black area on the belly and tail; specimens from the western and northern parts of the range have a narrow, midventral dark line frequently scarcely evident. The lateral light stripes are seldom not visible (placed on the second and third scale rows) in eastern specimens, but seldom evident in the western. Young, subadults and sometimes even large specimens of eastern specimens have a narrow, mid-dorsal light line involving only the vertebral scale row, while western specimens show no middorsal light line in either young or old. Moreover eastern specimens generally (81%) have the second labial in contact with the nasal on both sides of the head (usually the contact is broad), while in western specimens this occurs in but 22%. Eastern specimens also usually (75%) have 3-3 or more postoculars, while western specimens usually have 2-3 or 2-2 (72%). Finally, the caudals in eastern specimens are usually 64 or less in males (84%), 54 or less in females (73%), while in western specimens they usually number 65 or more in males (69%), 55 or more in females (84%).

The name *melanogaster* probably, although not certainly, is referable to the

eastern specimens. Peters' description is very brief and states only that a median black band is present on the belly, and that it is less distinct on the tail. The description might well apply to western specimens, but such a name as *melanogaster* hardly fits them, while it is very descriptive of the eastern specimens. Accordingly I restrict Peters' name to the eastern race, pending a study of the types that will definitely allocate the name.

Tropidonotus mesomelanus Jan also is based upon the eastern race as shown by the excellent figures on plates 5 and 6, livraison 27, of the *Iconographie Générale des Ophidiens*. The pigmentation of the tail is less extensive than usual and the anal plate is unmarked in one of the figures (pl. 6), but I have seen a specimen from Lake Xochimilco which duplicates the pattern shown in the figure so exactly that I have no doubt in referring the specimen depicted to the eastern race. On plate 5 another specimen, this from the Vienna Museum, is figured; it is a very typical specimen of the eastern race, and is here designated lectotype of Jan's *mesomelanus*.

A final name synonymous with *melanogaster* is *Tropidonotus Baronis Mülleri* Troschel. This is synonymized with the typical race of *melanogaster* for several reasons. In the first place the name is not in binomial form, since the species name consists of two words. The name, thus written, cannot be accepted; had a hyphen been used, thus making one word of it, the form would satisfy requirements of binomial nomenclature. Boulenger, in fact, referring the name to the synonymy of *melanogaster* (*Cat. Snakes Brit. Mus.*, vol. 1, 1893, p. 226) hyphenated the name, thus giving it nomenclatorial status. His description is based upon specimens of both races of *melanogaster*; I restrict it to eastern specimens, referable to the typical race.

Troschel's description of *T. Baronis Mülleri*, moreover, is not certainly indistinguishable to subspecies; the specimens are, of course, definitely *melanogaster*, but whether eastern or western is not made evident. By inference, since a comparison is made with *T. grahamii* and the belly is stated to have a midventral dark streak like that species, Troschel's specimens may have been western, for the belly streak in *grahamii*, when present, is quite narrow as in western *melanogaster*. The identification at present however cannot be definite; fortunately this is not imperative since Troschel's name is not available.

Accordingly no name proposed in the past appears to be available for the widely-distributed western race. It is named and described in the following. If, however, at some future date it develops that Peters'

type of *melanogaster* is based upon western specimens, then his name must take precedence over the one proposed here, and *mesomelanus* Jan will be available for the eastern race. Unfortunately it is impossible at present to offer a more assuredly permanent nomenclature for these snakes.

In 31 specimens, 25 have the second labial in contact with the nasal on both sides, 4 on one side, 2 on neither side. In 44 specimens, the postoculars are 2-2 in six, 2-3 in five, 3-3 in thirty, 3-4 in three. The ventrals are 144 to 158 in males, average 148.3, in females 140 to 153, average 145.2. The caudals are 58 to 68 in males, average 62.3, in females, 50 to 61, average 53.5.

Specimens examined of *Thamnophis melanogaster melanogaster* are from the following localities. *Distrito Federal*: Mexico City (Nos. 12726, 12729); Lake Xochimilco (EHT-HMS No. 5063). *México*: Chalco

(FMNH Nos. 983, 1099, 2038); Chimalhuacán (Nos. 110793-8); Lerma (EHT-HMS Nos. 5044-62, 5075-8, 5076A, 15942-7). The only record in the literature for a locality not represented by specimens examined and probably referable to *m. melanogaster*, is Jicaltepec, Veracruz.

These records indicate a range from central México (state) to western central Veracruz; it possibly occurs also in northern Puebla and southern Hidalgo.

Thamnophis melanogaster canescens
subsp. nov.

Holotype. EHT-HMS No. 5023, male, from Lake Chapala at Chapala, Jalisco, collected July 2, 1935, by H. M. Smith. *Paratypes*. Sixty-four, including EHT-HMS Nos. 4896, 4921, 4923-32, 4928A, 4934, 4936, 4939-41, 4942A, 4943, 4967-73, 4970A, 5020-2, 5024-43, all topotypes, same date and collector;

Scale Counts in *melanogaster melanogaster*.

Museum	Number	Sex	Scale Rows	Ventrals	Caudals	Supral.	Infral.	Proc.	Ptoc.
FMNH	983	♀	19-19-17	145	61	8-8	10-10	1-1	3-4
"	2038	♀	"	153	55	8-8	10-10	1-1	3-4
"	1099	♀	"	153	57	8-8	10-10	1-1	3-3
"	1099	♀	"	147	—	8-8	9-10	1-2	2-3
USNM	12726	♀	"	150	51	8-8	10-10	2-3	3-3
"	12729	♀	"	150	59	8-8	9-10	2-2	3-3
"	110794	♀	"	150	—	8-8	10-10	1-2	2-2
"	110797	♀	"	150	53	8-8	10-11	2-2	2-2
EHT-HMS	5044	♀	"	143	53	8-8	10-10	2-3	2-2
"	5045	♀	"	143	51	8-8	10-10	2-2	3-3
"	5046	♀	"	141	51	8-8	10-11	2-2	3-3
"	5047	♀	"	141	52	8-8	10-11	2-2	3-3
"	5048	♀	"	142	53	8-8	9-10	2-3	3-3
"	5049	♀	"	144	54	8-8	10-10	2-2	3-3
"	5051	♀	"	143	52	8-8	9-10	2-2	3-3
"	5052	♀	"	141	55	8-8	9-10	2-2	3-3
"	5057	♀	"	143	52	8-8	10-10	2-2	2-3
"	5058	♀	"	141	54	8-8	10-10	2-2	2-2
"	5060	♀	"	143	52	8-8	10-10	2-2	3-3
"	5063	♀	"	145	57	8-8	10-10	2-2	2-2
"	15943	♀	"	140	51	8-8	10-11	2-2	3-3
"	15944	♀	"	146	52	8-8	10-10	2-3	3-3
"	15945	♀	"	142	—	8-8	10-10	2-2	2-3
"	15946	♀	"	146	53	8-8	10-10	2-2	3-4
"	15947	♀	"	147	50	8-8	11-11	2-2	3-3
FMNH	1099	♂	"	155	67	8-8	10-10	1-1	3-3
USNM	110793	♂	"	158	68	8-8	10-10	2-2	3-3
"	110795	♂	"	152	68	8-8	9-10	2-2	2-2
"	110796	♂	"	154	59	8-8	10-10	3-3	3-3
"	110798	♂	"	152	64	7-7	10-10	2-2	3-3
EHT-HMS	5050	♂	"	150	59	8-8	10-10	2-2	2-3
"	5053	♂	"	145	61	8-8	9-10	2-2	3-3
"	5054	♂	"	144	60	8-8	10-11	2-2	3-3
"	5055	♂	"	147	62	8-8	10-10	2-3	3-3
"	5056	♂	"	144	64	8-8	10-10	2-2	3-3
"	5059	♂	"	147	64	8-8	9-10	2-3	3-3
"	5061	♂	"	149	64	7-8	10-10	1-2	3-3
"	5062	♂	"	145	61	8-8	9-10	2-2	3-3
"	5075	♂	"	147	63	8-8	10-10	2-2	3-3
"	5076	♂	"	147	61	8-8	10-10	2-2	3-3
"	5077	♂	"	146	58	8-8	10-10	2-2	2-3
"	5078	♂	"	146	62	8-8	10-10	2-2	3-3
"	5076A	♂	"	145	59	8-8	10-10	2-2	3-3
"	15942	♂	"	146	59	8-8	10-10	2-2	3-3

EHT-HMS No. 5019, Magdalena, Jalisco; EHT-HMS Nos. 5064-5, Lake Cuitzeo, Michoacán; EHT-HMS Nos. 5066-71, three miles east of Celaya, Guanajuato; FMNH No. 1529(2), Ocotlán, Jalisco; USNM No. 110800, Tacicuaró, Michoacán; USNM No. 110799, La Palma, Michoacán.

Diagnosis. Like *Thamnophis melanogaster melanogaster*, except: belly with scattered spots, immaculate or, usually, a narrow, sometimes broken longitudinal midventral dark line; lateral light stripes rarely evident; subcaudal surface unmarked or with a narrow, irregular median streak; never a middorsal light line; second labial generally (78%) separated from nasal on one or both sides of head; postoculars generally (72%) 2-2 or 2-3; subcaudal scales generally (67%) 65 or more in males, 55 or more in females (84%).

Description of Holotype. Head narrow, somewhat pointed, lores somewhat flaring; length of rostral visible from above two-thirds length of suture between internasals; latter equal to length of suture between prefrontals; frontal pentagonal, anterior

edge straight, posterior edges forming a right angle, sides somewhat concave, very slightly narrower posteriorly than anteriorly; length of frontal subequal to length of suture between parietals, slightly less than distance from frontal to tip of snout; sutures between nasals and rostral three-eighths width of posterior margin of rostral; nasal completely divided, anterior section subequal in size to posterior; loreal large, rectangular, longer than broad; preocular single on one side, but a lower part partly divided by two incomplete sutures; preoculars two on other side, upper much the larger; postoculars 2-3; temporals 1-2-2.

Supralabials 8-8, second narrowly in contact with nasal on one side, narrowly separated on the other; seventh labial largest, fourth and fifth entering orbit; infralabials 10-10, five in contact with anterior chinshields, two (fifth and sixth) with posterior chinshields; latter a little longer and broader than anterior, separated from each other throughout their length, divergent posteriorly.

Dorsal scales in 19-19-17 rows, all except those in outer two rows keeled and truncate;

Scale Counts in *melanogaster canescens* (Males).

Museum	Number	Scale Rows	Ventrals	Caudals	Supral.	Infral.	Proc.	Ptoc.
FMNH	1384	19-19-17	146	65	8-8	10-10	2-3	2-3
"	1384	"	149	67	8-8	10-10	1-1	3-3
"	1500	"	155	75	8-8	10-10	1-1	3-3
EHT-HMS	*4896	"	147	59	8-8	10-10	2-3	3-3
"	*4921	"	149	60	8-8	10-10	2-2	2-2
"	†4923	"	146	63	8-8	10-10	2-3	2-3
"	†4924	"	147	64	8-8	10-10	2-2	3-3
"	†4926	"	147	67	8-8	10-10	2-2	3-3
"	†4927	"	146	65	8-8	10-10	2-2	3-3
"	†4928	"	148	63	8-8	10-10	2-2	2-3
"	†4931	"	147	64	8-8	10-10	2-2	3-4
"	*4934	"	148	65	8-8	10-10	2-2	2-3
"	*4936	19-19-15	149	70	8-8	10-10	2-2	3-3
"	*4939	19-19-17	148	67	8-8	10-10	2-2	2-2
"	*4940	"	149	70	8-8	10-10	2-2	2-3
"	*4941‡	"	147	67	8-8	10-10	2-2	2-2
"	4942A	"	145	63	8-8	10-10	2-2	2-2
"	4943	"	147	67	8-8	10-10	§1-1	2-2
"	4970	"	148	—	8-8	10-10	2-2	3-3
"	4970A	"	148	—	8-8	10-11	2-2	2-2
"	4973	"	149	72	8-8	10-10	2-2	2-3
"	5023	"	148	69	8-8	10-10	1-2	2-3
"	5024	"	148	68	8-8	10-10	§1-2	2-2
"	5027	"	145	69	8-8	10-10	2-2	2-2
"	5028	"	143	67	8-8	10-10	2-2	2-2
"	5029	"	144	65	7-7	10-10	2-2	2-2
"	5030	"	146	68	8-8	10-10	2-2	2-2
"	5032	"	148	67	8-8	10-11	2-2	2-3
"	5034	"	146	63	8-8	10-10	2-2	2-3
"	5066	"	151	71	8-8	10-10	2-3	2-2
"	5071	"	152	73	8-8	9-9	2-2	2-3
USNM	23985	"	144	—	8-8	10-10	3-3	3-3
"	23986	"	149	—	8-8	10-10	2-2	3-3
"	23987	"	145	61	8-8	10-?	2-2	2-3
"	46412	"	154	69	8-8	10-10	2-3	3-3
"	46413	"	149	70	7-7	9-10	2-2	2-2
"	46414	"	150	71	8-8	10-10	2-2	3-3

* Young of No. 5038

† Young of No. 5021

‡ Anal divided

§ Loreal entering orbit.

scales in anal region with a central enlargement on the keel; ventrals 148; caudals 69; total length 525 mm., tail 124 mm.; male.

Entire dorsal surface slate (scales shed); when scales are spread, a narrow, interrupted, pure white line on the skin and adjacent edges of the third and fourth scale rows is evident; it is distinct and almost continuous anteriorly, but becomes less distinct posteriorly and is not evident on posterior fourth of body; a series of small black spots placed in the middle of this line at every second or third scale; these spots visible nearly to tail; a somewhat similar series of spots and light streaks, but much less evident, between the seventh and eighth scale rows; no dorsal or typical lateral light stripes (the light stripe described above is not the primary light stripe usually referred

to in *Thamnophis*; it is an accessory marking). Belly and tail light slate, chin cream; near the middle and posterior part of belly a very narrow, broken, longitudinal mid-ventral streak is discernible, but nowhere distinct; no dark marks on subcaudal surface; anal plate cream (not slate).

Specimens Examined. In addition to the 63 specimens of the type series, I have examined 16 others, including FMNH No. 1384(6), USNM Nos. 23985-9, Durango, and FMNH No. 1500, Coyotes, Durango; USNM Nos. 46411-4, La Parada, San Luis Potosí. Records in the literature referable to this race are from Guadalajara, Nevado de Colima, La Laguna and Colonia Brizuela, Jalisco; Tupátaro and Guanajuato, Guanajuato; and Tangancicuaro, Michoacán.

Variation. In 59 specimens, 13 have the second labial in contact with the nasal on

Scale Counts in *melanogaster canescens* (Females).

Museum	Number	Scale Rows	Ventrals	Caudals	Supral.	Infral.	Proc.	Ptoc.
FMNH	1384	19-19-17	145	63	8-8	10-10	1-1	3-3
"	1384	"	146	61	8-8	10-10	2-2	3-3
"	1384	"	138	53	8-8	10-10	2-2	2-2
"	1384	"	143	55	9-9	10-10	2-2	2-2
"	1529	"	145	57	8-8	10-10	1-1	2-2
"	1529	"	143	57	8-8	10-10	2-2	2-2
EHT-HMS	†4925	"	142	59	8-8	10-10	2-2	2-2
"	†4928A	"	141	59	8-8	10-10	2-2	2-3
"	†4929	"	140	60	8-8	10-10	2-2	3-3
"	†4930	"	145	55	8-8	10-10	2-2	2-3
"	†4932	"	142	56	8-8	10-10	2-2	2-2
"	4969	"	145	57	8-8	10-10	2-2	2-2
"	4971	"	143	60	8-8	10-10	2-2	2-2
"	4972	"	145	59	8-8	10-10	2-2	3-3
"	5019	"	137	56	8-8	10-10	2-2	3-3
"	5020	"	142	55	8-8	9-10	2-2	2-2
"	5021	"	146	—	8-8	10-10	2-2	3-3
"	5022	"	138	54	8-8	10-10	2-2	2-2
"	5025	"	139	60	8-8	10-10	2-2	2-2
"	5026	"	144	59	8-8	10-10	2-2	2-3
"	5031	"	138	55	8-8	10-11	2-2	2-2
"	5033	"	145	55	8-8	10-10	1-2	2-3
"	5035	"	139	55	8-8	10-10	1-2	2-2
"	5036	19-19-16	137	55	8-8	9-10	2-2	2-2
"	5037	19-19-17	141	51	8-8	10-10	2-2	2-2
"	5038	"	141	56	8-8	10-10	2-2	2-2
"	5039	"	143	54	8-8	10-10	2-2	2-2
"	5040	"	140	58	8-8	10-10	2-2	2-2
"	5041	19-19-16	147	58	8-8	10-10	1-2	2-3
"	5042	19-19-17	140	—	8-8	10-10	2-2	2-2
"	5043	"	143	55	7-8	10-10	1-2	2-2
"	5064	17-19-17	140	60	8-8	10-10	2-2	2-2
"	5065	19-19-17	141	—	8-8	10-10	2-2	2-2
"	5067	"	147	61	8-8	10-11	2-2	2-3
"	5068	"	147	58	8-8	10-10	2-2	2-2
"	5069	"	143	57	8-8	10-10	2-2	2-2
"	5070	"	146	57	8-8	10-10	2-2	2-3
"	4984A	"	139	—	8-8	9-10	2-2	3-3
"	4984B	"	137	55	8-8	10-10	2-2	3-3
USNM	23988	"	140	52	8-8	10-10	1-2	2-2
"	23989	"	142	55	8-?	11-?	2-?	?-?
"	46411	"	147	—	8-8	10-10	2-3	3-3
"	110799	19-19-16	143	—	8-8	10-10	2-2	2-2
"	110800	19-19-17	145	49	—	—	—	—

† Young of No. 5021

both sides, 12 on one side, 34 on neither side. In 79 specimens, the postoculars are 2-2 in 39, 2-3 in 18, 3-3 in 21, 3-4 in one. The ventrals vary from 143 to 155 in males, average 148.3; in females they are 137 to 147, average 142.3. The caudals are 59 to 73 in males, average 66.4; in females they are 49 to 63, average 56.6. Other details of the variation in scutellation are given on the accompanying table.

The largest specimen examined is a female (No. 5069) measuring 751 mm. in total length, the tail 155 mm. The largest male (No. 4973) measures 622 mm. in total length, the tail 146 mm.

In color there is considerable variation. There are two notable patterns. One, the more common, is exemplified by the holotype. In this type there is no very prominent dorsal pattern; most clearly evident is a lateral series of small spots in the third and fourth scale rows. A female of this type (No. 5038) contained seven young (Nos. 4896, 4921, 4934, 4936, 4939-41), all with the same pattern with the exception of one that is completely melanistic (there is also one completely black adult, No. 5022).

In the second pattern type, the spots in the two rows described in the type are much enlarged, although not with sharply defined or regular edges; the spots do not meet; the belly may have irregularly-placed spots near the midventral line, two or three on each ventral scale. One female (No. 5021) of this type contained eleven young, and all are marked dorsally like the mother, with very prominent spots; some have scattered dark spots on the belly, others have a midventral line or no marks whatever.

The constancy of pattern in the young suggests that there may be more than one form involved. There are five adults (Nos. 4969, 4973, 5021, 5030-31) that definitely belong to the distinctly-spotted group, 35 that belong to the nearly unicolor group, and one that is more or less intermediate

(No. 5034). Since the spotted specimens form such a small proportion of the adult population, it might be expected that, if the variant were of a normal type, there would be an equally small proportion of the young with such a pattern. That all the young of one female is the same, the rarer, type is distinctly unusual.

In no specimen is a middorsal light stripe present. Some show slight evidence of a lateral light stripe anteriorly, on the second and third scale rows.

Remarks. There seems to be little doubt of the distinctness of the two races of *melanogaster*. In greater doubt is the allocation of the names, and the identity of the spotted specimens from Chapala. The western race, *m. canescens*, ranges from eastern Guanajuato and Michoacán and southern San Luis Potosí westward to the Nevado de Colima and central Nayarit, northward to central Durango. It is possible that the Durango specimens may be distinguishable from the others, for 3-3 postoculars and 1-1 or 1-2 preoculars frequently occur in them. Specimens from that area have not been re-examined during the study of this species and are thus not included as paratypes. The Tepic specimens are typical, non-spotted. The Celaya specimens show some evidence of approach to *m. melanogaster*, as the midventral stripe is somewhat broader than in others of *m. canescens*.

Thamnophis rufipunctatus (Cope).

The type of *angustirostris* (No. 959) has the appearance of a hybrid between *melanogaster* and the species which has been known since 1908 (Ruthven. op. cit., pp. 120-124) as *angustirostris* (= *rufipunctatus*). That it cannot be identified with the species long known by that name has already been noted by Taylor (Taylor & Knobloch, *Proc. Biol. Soc. Wash.*, vol. 53, pp. 129-130, 1940). The essential differences between these two species may be contrasted as follows:

	<i>rufipunctatus</i>	<i>melanogaster</i>
Dorsal pattern	Upper row of spots distinct	No upper row of spots, lower row poorly defined
Ventral pattern	Irregularly mottled	Nearly all black, or a midventral dark line
Head pattern (juv.)	Labia strongly barred, head mottled	Labia indistinctly barred, head not mottled
Preocular	Never one	Occasionally one
Labials enter eye		Two
Dorsal scales	One	19-19 (17)-17
Ventrals	21-21 (23)-17	♀ 137-153 (69 counts)
Caudals	♀ 152-160 (9 counts)	♀ 49-63 (60 counts)
Range	♀ 65-68 (5 counts) Durango to Arizona	San Luis Potosí Mexico City to Durango and

The type of *angustirostris* has a very distinct body pattern, with well defined spots in the upper row as well as the lower; the labia are somewhat more strongly barred than in typical *melanogaster*; and the dorsal scales are in 21-21-17 rows. In these characters it is more nearly like *rufipunctatus*. It also has a nearly completely black belly, head nearly uniform except labial marks, one preocular, two labials entering orbit, and 149 ventrals. In these characters it is like *melanogaster*. In caudal count the type is exactly intermediate between the two species, having 64 (female). Since the type is from a locality intermediate between the known ranges of *melanogaster* and *rufipunctatus* there can be little question that it may be considered a hybrid.⁵ It may be an intergrade (i.e., of a fertile hybrid population), but the fact that both *rufipunctatus* and *melanogaster* are distinguishable in one locality (Coyotes, Durango, FMNH) indicates that the hybrids, if and when produced, are not fertile. Accordingly *angustirostris* gives no evidence in support of a view that *rufipunctatus* and *melanogaster* are subspecies.

The proper name for the northern form is open to question. In general the procedure is to let stand for hybrids those names based upon them, and accordingly *angusti-*

rostris cannot be applied to either of the parent species. The next earliest name available is *rufipunctatus*, which also unfortunately is based upon an atypical (partial albino?) juvenile. The type (No. 8600) now lacks all dorsal markings although Cope described it with red spots. In belly pattern it is typical. The head pattern cannot be discerned. The scutellation is typical, with the exception that two labials enter the orbit (a rare occurrence, but seen in other specimens). There are 173 ventrals; 86 caudals (δ); 8-9 supralabials; and 21-21-17 scale rows. It is not an anomalous *Natrix valida*, which has 139 to 154 ventrals (Van Denburgh, 1922). A later name, *Atomarchus multimaculatus* Cope, is without question referable to this species (cf. Taylor & Knobloch, *loc. cit.*)

Twenty-six Mexican specimens examined are from the following localities. *Chihuahua*: Colonia Juárez (FMNH No. 1096); Ahumada (FMNH No. 1259); San Andrés (FMNH No. 1275a); Chihuahua (Nos. 14254, 14261, 14265, 14271, 14275, 14286, 14288); Río Casas Grandes (No. 2659); Meadow Valley (No. 26592); Arroyo del Alamos, 70-74 kilometers south of Nueva Casas Grandes (Nos. 42874-5); Guadalupe y Calvo (No. 46368); Río Papagochic, Guerrero (No. 95607); Progreso (Nos. 104658-61), Mojárichic (EHT-HMS No. 23015). *Durango*: Coyotes (FMNH No. 1501-2); Guanacevi (No. 46369). *Sonora?* (No. 21055).

⁵ The possibility that it represents a distinct species still remains, however; only further specimens from the area represented by the type will show conclusively which interpretation is correct.

Scale Counts in *rufipunctatus*.

Museum	Number	Sex	Scale Rows	Ventrals	Caudals	Supral.	Infral.	Proc.	Ptoc.	Enter Labials Eye
EHT-HMS	23015	♀	21-21-17	156	64+	9-9	12-12	3-3	3-4	1
FMNH	1259	♀	21-21-17	158	—	8-8	10-11	3-3	3-4	1
USNM	14275	♀	21-21-17	152	68	8-9	10-11	3-3	3-4	1
"	14288	♀	21-21-17	160	67	9-9	10-11	3-3	3-4	1
"	26591	♀	21-21-17	155	—	8-8	10-10	2-2	3-3	1
"	26592	♀	21-23-17	160	65	8-9	10-11	3-3	4-4	1
"	104658	♀	21-21-17	154	—	8-9	10-11	2-3	2-?	1
"	104659	♀	21-21-17	158	—	8-8	10-10	2-2	3-3	1
FMNH	1501	♀	21-21-17	156	68	8-8	10-10	2-2	3-3	2
"	1096	♂	21-21-17	162	79	8-9	10-10	2-2	4-4	1
"	1275a	♂	21-23-17	163	78	8-8	9-9	3-3	3-4	1
USNM	14254	♂	21-21-17	161	—	8-8	10-10	2-3	2-3	1
"	14261	♂	21-21-17	162	76	8-?	10-?	2-3	3-3	1
"	14261	♂	19-21-17	158	—	8-8	10-10	3-3	3-4	1
"	14265	♂	21-21-17	160	79	8-8	10-10	2-2	3-3	1
"	14271	♂	21-21-17	164	80	8-?	11-?	3-3	3-4	1
"	14286	♂	19-21-17	159	82	8-9	11-11	3-3	3-4	1
"	42874	♂	21-21-17	163	—	8-8	10-10	2-2	3-4	1
"	42875	♂	21-21-17	165	—	7-8	10-10	2-2	3-3	1
"	46368	♂	21-21-17	174	76	8-8	10-10	2-3	3-3	1
"	46369	♂	21-21-17	177	78	8-9	9-10	2-3	3-4	1
"	95607	♂	21-21-17	166	77	8-8	10-10	2-3	3-3	1
"	104660	♂	21-21-17	159	—	8-8	10-11	2-2	3-3	1
"	104661	♂	21-21-17	162	76	8-8	9-10	2-4	2-4	1
FMNH	1502	♂	21-21-17	165	—	8-8	10-11	2-2	3-3	1
USNM	21055	♂	21-21-17	164	79	8-8	10-10	2-2	3-3	1

KEY TO MAINLAND MEXICAN AND CENTRAL AMERICAN *Thamnophis*.

1. Lateral stripe involving third and fourth scale rows on anterior part of body...2
Lateral stripe not involving fourth row, indistinct, absent, or involving only the second or third row or both.....5
2. Scale rows 21 at middle or on anterior third of body; anterior edges of ventrals black.....3
Scale rows 19, maximum (except immediately behind head).....4
3. Caudals 78 or less in males, 68 or less in females...*macrostemma macrostemma*
Caudals 79 or more in males, 69 or more in females.....*macrostemma megalops*
4. Caudals 93 to 104, ventrals 155 to 169, totals 255 to 262 in females; 102 to 109, 158 to 172, and 260 to 277, respectively, in males.....*sauritus proximus*
Caudals 83 to 96, ventrals 142 to 159, totals 229 to 254 in females; 92 to 99, 149 to 158, 245 to 256, respectively, in males.....*sauritus chalceus*
5. Scale rows 21 or more on anterior third of body.....6
Scale rows less than 21.....10
6. Preoculars two or more; usually one labial entering orbit.....*rufipunctatus*
Preocular single; usually two labials entering orbit.....7
7. Usually anterior edges of ventrals black, and the entire belly clouded, but never a longitudinal dark line or entire belly black; chin and sometimes subcaudal surface cream, sharply differentiated from dark belly color.....3
Not so; belly unmarked or with a longitudinal dark line, or nearly entirely black, or with scattered dark spots; chin and subcaudal surfaces not sharply differentiated from dark color of belly...8
8. Belly almost completely black (or perhaps a midventral black stripe); lateral light stripe not restricted to third row anteriorly.....*angustirostris*
Belly not with a median, more or less extensive black stripe; lateral stripe, when evident, restricted to third row anteriorly.....9
9. Vertebral light stripe one and two half scale rows wide, at least at base of tail.....*marcianus*
Vertebral light stripe one scale row wide, or nearly indistinguishable, even at base of tail.....*ruthveni*
10. Preoculars two or more, rarely one; belly usually with a continuous, longitudinal black area on center; scale rows 19 on anterior third of body.....11
Preoculars single; belly not with a continuous black area (or if so, scale rows no more than 17).....12
11. Black on belly and tail very extensive, covering nearly all of ventral surface; vertebral and lateral light stripes evident in all except large specimens; second labial generally (81%) in contact with rostral; postoculars usually (75%) 3-3 or more; caudals usually 64 or less (84%) in males, 54 or less (73%) in females...*melanogaster melanogaster*
Black on belly and tail entirely absent or restricted to a midventral line or a few scattered spots; rarely light lines evident, never the middorsal; second labial usually not (78%) in contact with rostral; postoculars usually (72%) 2-2 or 2-3; caudals usually over 64 (69%) in males, 55 (84%) in females
melanogaster canescens
12. Maximum dorsal scale rows 17, and no evidence whatever of a middorsal stripe on any part of body...*chrysocephalus*
Dorsal scale rows more than 17, or if only 17, a vertebral light stripe present or indicated on some part of body.....13
13. A moderately dark area in middle of each parietal, sometimes fused with nuchal blotches, darker than most of the remainder of the dorsal surface of head (light).....14
No distinct dark mark on center of parietal; head nearly uniform light or dark above.....15
14. Large spots present on body, usually a single series extending completely across back.....*phenax phenax*
Spots on body (except on neck) poorly defined or absent...*phenax halophilus*
15. The spots in the two rows on each side, between the vertebral and lateral stripes, fused together over most of body (not just on neck).....17
The spots in the two rows on each side, between the vertebral and lateral stripes, not fused together except on neck; spots disappearing posteriorly or not.....16
16. Scale rows anteriorly 17⁶.....17
Scale rows anteriorly 19.....19
17. Dark color of dorsal surface of head and nape with a clearly defined, dark-edged indentation a little posterior to angle of mouth, extending anterodorsally toward midoccipital region; scale rows usually 19 on some part of body; spots usually distinct on most of body.....18
Dark color of dorsal surface of head and nape lacking any clearly defined, dark-edged light indentation behind angle of mouth; scale rows seldom over 17 on any part of body; no spots distinct on body posterior to nape, dorsum nearly uniform brown.....*scalaris godmani*
18. Scale rows posteriorly usually 17 (94%); anterior scale rows usually 19 (88%)
scalaris scalaris
Posterior scale rows usually less than 17 (70%); anterior scale rows usually less than 19 (93%).....*scalaris scalaris*
19. Spots in upper row of the two series between vertebral and lateral light lines fused together and usually with the spots in the outer row, the latter spots remaining distinct from each other; ground color red between spots of outer row (above lateral stripe); middorsal stripe well-defined...*sirtalis parietalis*
Spots not fused in such a manner, although sometimes poorly defined or corresponding spots of the two rows fused together; ground color not red; middorsal stripe distinct or not.....20

⁶ Some care must be used to determine whether the scale rows are reduced to 17 at any point on the anterior part of body.

20. Middorsal stripe with continuous, straight edges, covering one and two half scale rows; rounded dark spots on anterior edges of ventrals on sides of at least part of belly; ventrals seldom over 157, caudals seldom over 76.....21
Middorsal stripe usually covering only the vertebral row, or indistinct, or absent; if broader, not straight edged and ventrals and caudals more numerous; belly not spotted22
21. Supralabials strongly barred; head dark above, the color fused with that of nape; ventrals 136 to 140
sumichrasti praeocularis
Supralabials not or weakly barred; head light above, its color sharply differentiated from that of nape; ventrals 144 to 167*sumichrasti cerebrosus*
22. No median light stripe on any part of body, its place occupied by a median series of dark spots.....27
A median light stripe at least anteriorly; no median series of dark spots.....23
23. A very distinct median light stripe throughout length of body; and dark spots present on the scales below the lateral light line at least anteriorly, visible without spreading the scales; ventrals seldom less than 149.....24
Median light stripe indistinct or absent posteriorly; or, if distinct posteriorly, no dark spots on the scales below the lateral light line25
24. Ventrals 167 or more in males, 163 or more in females.....*eques cyrtopsis*
Ventrals 166 or less in males, 162 or less in females.....*eques eques*
25. Ventrals 155 to 166....*ordinoides errans*
Ventrals fewer, 136 to 153.....26
26. Median light stripe scarcely distinguishable on any part of body, and nowhere more than one scale row wide
eques postremus
Median light stripe covering one and one half to three scale rows anteriorly, but disappearing completely on posterior part of body.....*sumichrasti fulvus*
27. Ventrals 139 to 157 in males, in females 139 to 147; caudals 58 to 72
sumichrasti sumichrasti
Ventrals 155 to 162 in males, 149 to 156 in females; caudals 78 to 89....*vicinus*



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