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A NEW SPECIES OF GARTER SNAKE FROM WESTERN MEXICO

By Roger Conant¹

The opportunity has arisen for me to resume my studies on Mexican garter snakes of the genus *Thamnophis*. Beginning in 1949 and continuing intermittently until 1965, my late wife, Isabelle Hunt Conant, and I were privileged to undertake extensive fieldwork in Mexico. We visited all 31 states and the Federal District, concentrated on natricine snakes (*Thamnophis* and *Natrix* = *Nerodia*), and deposited our material in the collection of the American Museum of Natural History. Demands on my time since then have kept me from working up much of our Mexican material. Eight papers resulted from studies on our collections, however, the most important of which was a long monograph on the water snakes of Mexico (Conant, 1969).

Comparable reports on *Thamnophis eques*, *Thamnophis melanogaster*, and *Thamnophis rufipunctatus*, garter snakes that occupy the water snake niche over wide areas of Mexico, were contemplated, but were

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eventually abandoned because of lack of time. My interest in *Thamnophis eques* has continued, however, and I recently began reexamining some of the disjunct populations. One of these is sufficiently different from other members of the *Thamnophis eques* complex to warrant recognition as a separate species. For this I propose

***Thamnophis rossmani* new species**

Rossman's Garter Snake

Figure 1

HOLOTYPE.—LSUMZ 30390. An adult male from an open roadside ditch 1.4 km NW of the small settlement of San Cayetano, Nayarit, Mexico, collected 26 May 1969 by D. A. Rossman, W. G. Eberle, D. Morizot, and A. Varkey. (The type locality is depicted in Figure 2.)

PARATYPES.—AMNH 83953-83969 from near Puente San Cayetano; LSUMZ 30391-30393 collected with the holotype; TNHC 26936 4.8 km SE Tepic; UIMNH 18836 Tepic. All from the Mexican State of Nayarit.

DIAGNOSIS.—A *Thamnophis* of moderate size characterized by three pale longitudinal stripes, the middorsal the most prominent and set off on both sides of the body by a continuous or nearly continuous narrow black line occupying the outer half of the paravertebral scales and part of the scales immediately below them. Also, a marked reduction in size of the paired dark spots in the areas between the stripes in comparison with other members of the *Thamnophis eques* complex with which *Thamnophis rossmani* is clearly allied.

DESCRIPTION OF HOLOTYPE.—All dorsal scales keeled, in 21 rows anteriorly, reducing to 19 by the loss of the fourth row at the level of ventral 86 on the left and 84 on the right. Reducing again to 17 by the loss of the fourth row at the level of ventral 115 on the left and ventral 114 on the right. Total ventrals 167, anal undivided, subcaudals 83. Apical pits present on many scales of the anterior part of the body, absent elsewhere.

Rostral wider than high, visible in part from above. Two nasals, the anterior containing the nostril entirely within it. Loreal subtrapezoidal, about as wide as high. Crown scales (paired internasals, prefrontals, supraoculars, and parietals and a single frontal) similar in shape and arrangement to other species of *Thamnophis*; supralabials 8, fourth and fifth entering orbit; infralabials 9 on left, 10 on right, five in contact with anterior



FIGURE 1. Living *Thamnophis rossmani* collected in July 1959 near Puente San Cayetano, 5.6 km SE of Tepic, Nayarit, Mexico (male left, female right). One of the diagnostic characters, the small size or near absence of dark spots between the longitudinal stripes, is readily apparent. Photograph by Isabelle Hunt Conant.

genials, posterior genials longer than anterior ones. One preocular; four postoculars on left, three on right; one anterior temporal; three posterior temporals on left, two on right. Total length 643 mm, tail length 160 mm, tail length/total length 24.9%. Hemipenes everted and of similar shape and appearance as Figure B in Rossman et al. (1996, p. 32).

All three longitudinal stripes pale yellowish green. Central stripe occupying middorsal row of scales and adjacent halves of paravertebral rows. Lateral stripes occupying scale rows 3 and 4 anteriorly and rows 2 and 3 near tail. Ground color between stripes medium brown. Spots between stripes greatly reduced in size and consisting of small to very small black spots chiefly touching the edges of the pale stripes. Black spots on lowermost side of body similarly reduced and positioned. Top of head medium brown and matching ground color between stripes. A large black spot above angle of jaw on each side of head. A small pale parietal spot on right, none on left (parietal scute sloughed off). Venter pale grayish green, darkening slightly toward rear of body. Chin and throat pale yellow, unmarked. Underside of tail and anal scute yellowish, also unmarked. Base of each ventral, normally concealed beneath overlapping imbrication of preceding ventral, marked with a narrow dark gray crossline.

VARIATION AMONG THE PARATYPES.—All 22 of the paratypes strongly display the two diagnostic characteristics of the new species.

1. *The smallness or near absence of the paired dark spots between the pale longitudinal stripes.* The spots are large and conspicuous in nearly all other populations of the *Thamnophis eques* complex. Figure 1 shows the extremes in extent of the interstripe spotting in *Thamnophis rossmani*. The male is considerably more spotted than the female, but there is no consistent sexual difference. Among the paratypes there are females that more or less match the male depicted and vice versa.

2. *The narrow black line along each outer edge of the middorsal stripe.* This is conspicuous in some specimens, less so in others. It may be narrow or be slightly interrupted, but with the specimen in hand it is clearly evident. In UIMNH 18836 (a female 550 mm in total length, 430 mm snout-vent length) the black line is especially prominent despite the fact that the snake shed its scales (the stratum corneum) in the bottle after it was preserved. AMNH 83956 (a male with an incomplete tail but with an estimated total length of well over 600 mm, snout-vent length 477 mm) has an almost perfect continuous black line on each side of the middorsal stripe.

Measurements of the paratypes indicate that *Thamnophis rossmani* is of moderate size in comparison with garter snakes of other species. Roughly half of the specimens, presumably all adults, have incomplete tails. Males with full tails range from 509 to 655 mm in total length, mean 579 mm; females from 480 to 714 mm, mean 570 mm. The largest male (AMNH 83960) has a snout-vent length of 488 mm. The largest female (LSUMZ 30391), measuring 745 mm, has only a fraction of its tail. Its snout-vent length is 648 mm.

In a paper devoted largely to an analysis of using anal plates and apical pits for distinguishing between garter and water snakes (Conant, 1961), information was abstracted from the series of garter snakes from Nayarit. Also included were a detailed description of coloration in life of AMNH 83961 and a table entitled "Variation in Scutellation and Tail Length Proportions in *Thamnophis eques* from Near Tepic, Nayarit." These are now identifiable as *Thamnophis rossmani*, and the 1961 paper may be consulted for details. The specimens collected by Rossman et al. in 1969 are obviously not included in the table.

HABITAT.—Known only from springs, seepage runs, and ditches near but not along the San Cayetano River, a small stream flowing northwestward to and beyond Tepic. Based on the material available, the known range is small. The distance from the center of Tepic to the settlement of San Cayetano is only 9.7 kilometers. During the four days that my wife and I worked along the river, from near the Puente San Cayetano to El Labor south of Sanganguey volcano, we found no garter snakes, although we searched diligently for them and their habitats. Our series of 18 specimens² collected in July 1959 was taken in marshy, treeless areas west of Puente San Cayetano, but well away from the river. The springs and their runs were recharged daily by thundershowers of the rainy season that prevailed during our fieldwork. They interfered with and usually precluded hunting at night. Rossman and his students found their series of specimens ten years later at night, but they collected in May during the dry season.

Mexico's long transvolcanic belt terminates in the Pacific Ocean about 32 kilometers west of Tepic, which is 914 meters above sea level. The city is almost surrounded by extinct volcanoes and old lava flows that, over millions of years, must have disrupted the distributions of many organisms. Southeast of Tepic, however, there is a small plain, the Valle Matatipal, highly irregular in shape and measuring roughly 14.5 km wide from north to south and 17.7 km from east to west. Suitable habitats for *Thamnophis rossmani* may have existed within it and other small plains of the general region before they were disturbed for agriculture. The localities where we collected in 1959 and other meager, flat or arable terrain of the general region have been drastically altered. Available evidence, admittedly fragmentary, indicates that *Thamnophis rossmani* may be in grave danger, if not already extinct, so I have included all my information about it.

FEEDING BEHAVIOR.—The spring rills, usually more sinuous and with far less water than the one portrayed in Figure 3, were inhabited by small fishes, unidentified but probably cyprinids measuring roughly 25 mm to 50 mm in length. When the rills were not in flood there were occasional riffles along them over which the fishes had to flip their way. On two occasions we watched individuals of *Thamnophis rossmani* lying in wait and catching fishes as they crossed the riffles.

² Included is an unnumbered specimen from which all pertinent data were recorded before it was sent to authorities in Mexico City in compliance with collecting permit requirements.



FIGURE 2. *Thamnophis rossmanni*, including the holotype (LSUMZ 30390), was collected in the water along the road 1.4 km NW of San Cayetano, Nayarit, Mexico, on 26 May 1969. Photograph by Douglas A. Rossman.



FIGURE 3. A seepage run from a spring, a common habitat of *Thamnophis rossmanni*. The water was high because of a heavy thundershower the previous evening. Photograph by Isabelle Hunt Conant.

ETYMOLOGY.—I take pleasure in naming this garter snake for Douglas Athon Rossman, a principal student of the genus *Thamnophis* for many years. Fortuitously, he and some of his students collected a small series of the new species in 1969, so he is familiar with it under field conditions. It is appropriate that it should bear his name.

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Material on which this paper is based is from the American Museum of Natural History (AMNH); the Museum of Natural Science, Louisiana State University (LSUMZ); the Texas Memorial Museum, Texas Natural History Collection (TNHC); and the University of Illinois Natural History Museum (UIMNH).

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