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PRELIMINARY ACCOUNT OF THE CORAL SNAKES
OF CENTRAL AMERICA AND MEXICO

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The identification of three coral snakes collected by Leon L. Walters and myself in Honduras in 1923 has involved me in a comprehensive study of the genus *Micrurus*. This has proved to be far more difficult than could be foreseen; it has been greatly retarded by the dearth of collections from critical regions, and has been repeatedly interrupted by other duties. Thanks to a John Simon Guggenheim Memorial Fellowship in 1932, I was able to return to work on this genus in connection with other Central American studies in European museums. The examination of a majority of the types and of additional collections of these snakes abroad, has cleared up a considerable proportion of the outstanding problems. In spite of the remaining taxonomic difficulties, which can be solved only by additional collections, especially from southern Mexico, I venture to present a preliminary account of the studies.

The list of friends and colleagues, both American and European, who have aided by the loan of specimens in their charge or by enabling me to study in their laboratories is so long that its enumeration is postponed for more extended papers in preparation.

Mexican and Central American specimens which have passed through my hands number 353, of which 153 are in European collections and 200 in American. The types of eighteen of the twenty-two previously described species have been examined. Six new forms are described in the present paper.

The genus *Micrurus* is characterized by great uniformity of arrangement of the head shields and the number of dorsal scale rows. It becomes, therefore, the more necessary to scrutinize the taxonomic characters available. One of the first results of this critique is to affirm the constancy and value of the color pattern characters. It becomes evident, furthermore, that the characters employed require renewed critical evaluation for every species. For

example, the contact between the mental shield and the anterior chin-shields, which is a constant character in *Micrurus narduccii*, is obviously an anomaly in other species. Unfortunately, Boulenger's use of this character, in his synopsis of the genus in 1896, led him to give it an undue importance, and to describe specimens of *Micrurus mipartitus*, *M. ancoralis*, and *M. pyrrhocryptus* as "new species"; and my brother and I, influenced by his practice, based our *M. helleri* from Peru on a specimen of *M. lemniscatus* which exhibits the same fortuitous character. The converse, obviously, may be equally true. It is repeatedly found that characters which appear as anomalies in various species may be constant specific characters in others. Thus the temporal formula 1-2 appears throughout the genus in species with temporals normally 1-1; but in *M. affinis affinis* 25 per cent of the males have temporals 1-2, and in *M. a. mayensis* this rises to 83 per cent and is the normal arrangement. Similarly, entire caudals appear with varying frequency, though unknown in many species; while *M. spixii* invariably has a low number of undivided caudals, and *M. affinis mayensis* has, on the average, more than half the caudals undivided.

I have already called attention to the interesting secondary sex character of supra-anal knobs or tubercles in adult males of *Micrurus nigrocinctus*. This character proves to be a veritable key to the confusion of the Mexican and Central American forms, which can be sorted into two valid groups according to its presence or absence.

Strong sex dimorphism in the number of ventrals and subcaudals is frequent in coral snakes, perhaps reaching an extreme in the *nigrocinctus* series. Recognition of this dimorphism reveals two entirely unsuspected subspecies. *Micrurus nigrocinctus mosquitensis* has ventrals 182-194 in males and 203-209 in females; in *M. n. nigrocinctus* the scale counts in males, 194-223, fill the gap between male and female *mosquitensis*, and the female ventral range, 208-231, is also much higher, so that the ventral count of female *mosquitensis* falls between the male and female of *nigrocinctus nigrocinctus*. The relation between the geographically distinct *Micrurus elegans elegans* and *M. e. verae-pacis* is similar.

The widest geographic gap in the coral snakes of Mexico and Central America is between *M. fulvius tenere* of northern Tamaulipas, and *M. affinis affinis* of Vera Cruz. This gap may be due merely to the want of collections from the intervening 300 miles; but in the absence of specimens I have dropped altogether the presumptive relation between *M. fulvius* and the Mexican forms which has been

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current since Boulenger's revision of the genus in 1896 in the "Catalogue of Snakes."

In arriving at the present arrangement of the specimens examined, I have been unable to allocate satisfactorily a number of Mexican specimens without locality; but the specimens with locality data have fallen so satisfactorily into definable groups that I feel confident that this residuum of unidentifiable specimens will fall into place when central and southern Mexico are more adequately explored for these creatures.

That analysis and not synthesis is the more productive method of study in this genus becomes clearer with every additional collection examined. A few widely scattered specimens present a picture of hopelessly irregular variability; but as representative collections from connected geographic areas become available, uniform characters appear. These uniform populations are the basic taxonomic units. The breaking up of *Micrurus* into numerous species and subspecies is in accordance with expectation for subterranean forms of such limited vagility.

***Micrurus mipartitus* (Duméril and Bibron).**

Elaps mipartitus Duméril and Bibron, *Erpétol. Gén.*, 7, p. 1220, 1854.

Elaps multifasciatus Jan, *Rev. Mag. Zool.*, 1858, p. 521, 1858.

Elaps hertwigi Werner, *Verh. Zool. Bot. Ges. Wien*, 76, p. 354, 1896.

Type locality.—Rio Sucio, Colombia.

The range of variation in number of both ventrals and subcaudals in Central American specimens is within the extremes of Colombian and Venezuelan specimens, and I do not find it feasible to partition this species into subspecies. Most specimens of *mipartitus* assort into sex groups with widely distinct ranges of ventral plates, but aberrant males with a high number of ventrals and females with a low number connect these groups.

Range.—Central Nicaragua to Peru and Venezuela.

***Micrurus dunni* Barbour.**

Micrurus dunni Barbour, *Occ. Papers Mus. Zool. Univ. Mich.*, 129, p. 15, 1923.

Type locality.—Ancon, Canal Zone, Panama.

This species, the only one in Panama with the black rings arranged in triads, is very closely allied to *M. melanogenys* of the Santa Marta region in Colombia.

Range.—Eastern Panama to the Canal Zone.

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Micrurus elegans elegans (Jan).

Elaps elegans Jan, Rev. Mag. Zool., 1858, p. 524, 1858.

Type locality.—Mexico.

This species, with its complicated and remarkably invariable color pattern of triads of black rings, in which the central one is set off from the outer by double rows of yellow scales, is not closely allied to any other species in the genus. Well-defined supra-anal keels are present in adult males. As is shown below, *elegans*, *sensu lat.* can be partitioned into two fully distinct and geographically well-separated subspecies.

Range.—Vera Cruz to Tabasco, Mexico.

Micrurus elegans verae-pacis subsp. nov.

Type from Campur, Alta Vera Paz, Guatemala. No. 2247a Zoologische Sammlung des Bayerischen Staates, Munich, Germany. Adult male. Collected, 1899, by Karl Sapper.

Diagnosis.—A coral snake with black, yellow, and red rings, arranged as in *M. e. elegans*; ventrals and caudals more numerous in both sexes than in *e. elegans*, as follows:

	V.P. ♂	V.P. ♀	C. ♂	C. ♀
<i>Micrurus e. elegans</i>	188-195	206-211	40-43	29-31
<i>Micrurus e. verae-pacis</i>	208-212	220-228	46-49	33-37

The number of triads of black rings is also somewhat greater in *verae-pacis*.

Paratypes.—Zoologische Staatssammlung, Munich, Nos. 2245, 2247b, 2248 (three specimens), and 2249 (two specimens); British Museum, two specimens from low forest, Vera Paz; Museum d'Histoire Naturelle, Paris, one specimen from Alta Vera Paz; and Naturhistorisches Museum, Basel, a specimen from Vera Paz.

Range.—Alta Vera Paz, Guatemala.

Micrurus stewarti Barbour and Amaral.

Micrurus stewarti Barbour and Amaral, Bull. Antivenin Inst. Amer., 1, p. 100, 1928.

Type locality.—Sierra de Bruja, Panama.

This recently described form is known only from the single type specimen. Its color pattern of black bands alternately longer and shorter is derived from the pattern with black, yellow, and red rings by the invasion of the red rings with black pigment, as may be seen in various stages in *M. fulvius tenere*, *M. ephippifer*, and especially in *M. psyches* and its allies.

Range.—Sierra de Bruja, Panama.

Micrurus nigrocinctus nigrocinctus (Girard).

Elaps nigrocinctus Girard, Proc. Acad. Nat. Sci. Phila., 1854, p. 226, 1854.

Elaps melanocephalus Hallowell, idem, 1860, p. 485, 1860.

Type locality.—Taboga Island, Bay of Panama.

The group of species with prominent supra-anal tubercles in adult males is represented in Panama and on the Pacific coasts of Costa Rica and Nicaragua by this form, which combines a high number of ventral scales with uniformly black spotted scales in the red zones; it is distinguished by the former character from its nearest geographical ally, *M. n. mosquitensis*, in northwestern Panama, and by the latter from *M. n. divaricatus* of northeastern Nicaragua and Honduras.

Range.—Panama Canal Zone, southwestern Panama, Pacific slopes of Costa Rica and Nicaragua.

Micrurus nigrocinctus mosquitensis subsp. nov.

Type from Limon, Costa Rica. No. 19741 Museum of Comparative Zoology. Adult male. Collected, 1924, by Samuel Kress.

Diagnosis.—A coral snake with black, yellow, and red rings, not arranged in triads; supra-anal tubercles strongly developed in males; ventrals 182–194 in males, 203–209 in females; black rings 4–6 ventrals wide, 10 to 19 on the body, averaging 12 in males and 13 in females; black caudal rings 4–7 in males, 3–4 in females; yellow zones well developed; scales in red zones uniformly tipped with black.

Differs from *M. n. nigrocinctus* in its lower number of ventrals, lower number of black rings, and broader yellow zones; from *M. n. divaricatus* by the lower ventral count and the uniform distribution of black in the red zones.

Paratypes.—Museum of Comparative Zoology Nos. 9548, 9570, 17087, 19333, 19742, 20449, and 22211–12; United States National Museum Nos. 9784, 19553, 30624–5, 30627–8, and 37345; American Museum of Natural History Nos. 5916, 12702, 17293, and 17365; British Museum Nos. 94.10.1.38, 95.4.29.10–11, 95.2.20.10, 68.9.21.1, and 68.9.21.4; Naturhistorisches Museum, Vienna, Nos. 1889 and 1901.23e; Senckenbergisches Museum, one San José specimen; and California Academy of Sciences, collector's No. 183.

Range.—Atlantic slopes of western Panama, Costa Rica, and southern Nicaragua.

Micrurus nigrocinctus divaricatus (Hallowell).

Elaps divaricatus Hallowell, Jour. Acad. Nat. Sci. Phila., (2), 3, p. 36, 1855.

Closely allied to *M. n. nigrocinctus* and *M. n. mosquitensis*, differing from the former in having the black in the red zones irregularly distributed and in having broader yellow rings; and from the latter in the black pigment character and higher number of ventrals. The ventrals range from 195 to 210 in males, and from 207 to 220 in females; the black bands average 16 in males and 18 in females, ranging from 11 to 26.

Range.—Northeastern Nicaragua and northern Honduras and lowland eastern Guatemala.

Micrurus nigrocinctus zunilensis Schmidt.

Micrurus nigrocinctus zunilensis Schmidt, Proc. Calif. Acad. Sci., (4), 20, p. 266, 1932.

Type locality.—Finca El Cipres, lower slopes of Volcan Zunil, Suchetepequez, Guatemala.

This form, characterized by the great reduction and usually complete absence of black pigment in the red zones, and by the reduction or absence of the yellow rings, is known from numerous specimens from the Pacific slopes of Guatemala. Its range has not been traced to that of either *M. n. nigrocinctus* or *M. n. divaricatus*, for the coral snakes of the Pacific slope of Honduras and of Salvador are unknown. The ventrals range from 196 to 223 in males and from 211 to 224 in females.

Range.—Pacific slope of Guatemala.

Micrurus ruatanus (Günther).

Elaps ruatanus Günther, Biologia Centrali-Americana, Rept., p. 185, pl. 57, fig. B, 1895.

Type locality.—Ruatan Island, Bay Islands, Honduras.

Although clearly allied to the *nigrocinctus* group by its supranal tubercles, this form is sharply distinguished by its high number of black bands, 34 to 45, which are approximately equal to the intervening light rings. The ventral counts do not overlap those of *M. n. divaricatus*, its nearest mainland representative, but correspond closely to those of *M. n. mosquitensis*. It seems to me preferable to retain full specific status for this form.

The black rings are alternately wider and narrower, and the narrower rings are frequently interrupted on the sides. The light rings are apparently red, and I interpret these alternate black rings of *ruatanus* as homologous with the accessory black rings of *Micrurus*

affinis apiatus. In male specimens there are from 5 to 12 undivided subcaudals, average 9.

Range.—Known only from Ruatan Island, Bay Islands, Honduras.

***Micrurus latifasciatus* sp. nov.**

Type from Finca El Cipres, Volcan Zunil, Suchetepequez, Guatemala. No. 22135 Museum of Comparative Zoology. Adult female. Collected, 1925, by A. W. Anthony.

Diagnosis.—A coral snake with black, yellow, and red rings; well-developed supra-anal tubercles in adult males; black rings few, 6 to 9, and broad, covering 6 to 11 ventrals; red rings very broad, covering 17 to 26 ventrals; scales in red rings uniformly black-spotted; yellow rings well developed; black rings on tail 2-3; temporals invariably 1-1; very rarely a few caudals entire; ventrals 192-197 in males, caudals 50-55; 204-214 and 40-46 in females.

Closely allied to the *nigrocinctus* group, but apparently specifically distinct and within the range of *M. n. zunilensis*; no other coral snake has such broad black and red zones. Its nearest ally may prove to be *M. nuchalis* of Oaxaca.

Paratypes.—Naturhistorisches Museum, Basel, Nos. 2290, 2292-6, and 2311; Senckenbergisches Museum No. 9424c (three specimens); Museum d'Histoire Naturelle, Paris, No. 4614d (two specimens); American Museum of Natural History Nos. 17368 and 45091; United States National Museum No. 20637; Museum of Comparative Zoology No. 22133; Stanford University No. 4077; and Zoologische Staatssammlung, Munich, No. 2263.

Range.—Pacific slope of Guatemala.

***Micrurus nuchalis* sp. nov.**

Type from Tapanatepec, Oaxaca, Mexico. No. 27830 Museum of Comparative Zoology. Adult female. Collected Nov. 7, 1927, by W. W. Brown.

Diagnosis.—A coral snake with black, yellow, and red rings, the black rings not arranged in triads, or with a narrow black accessory ring bordering the red zones next to the yellow; supra-anal tubercles distinct in males; ventrals 201-208, caudals 40-51 in males, 203-209 and 37-40 in females; temporals invariably 1-1; no entire caudals recorded; black bands few, 8 to 9 in both sexes, 2-3 ventrals wide; nuchal black ring much broader; black bands on tail 2-3; scales in red zones heavily and uniformly black-spotted.

Apparently allied to *M. latifasciatus* of the Pacific slope of Guatemala; the coral snakes of Chiapas are unknown. It is the western-

most and northernmost species with supra-anal tubercles, and overlaps the range of the very distinct *M. ephippifer*, which, however, is only known from females.

Paratypes.—Naturhistorisches Museum, Vienna, three specimens from Cacoprieto, Mexico; Museum d'Histoire Naturelle, Paris, Nos. 4612a (two specimens) and 4622a.

Range.—Oaxaca, Mexico.

Micrurus affinis affinis Jan.

Elaps diastema (part) Duméril and Bibron, Erpétol. Gén., 7, p. 1222, 1854.

Elaps affinis Jan, Rev. Mag. Zool., 1858, p. 525, 1858.

Elaps hippocrepis Peters, Monatsber. Akad. Wiss. Berlin, 1861, p. 925, 1861.

Elaps corallinus var. *crebripunctatus* Peters, idem, 1869, p. 877, 1869.

Type locality.—Mexico.

Micrurus affinis was based on two specimens from Mexico in the Museum d'Histoire Naturelle in Paris (No. 4624). These specimens agree in every detail with the very distinct race of coral snakes found in southern Vera Cruz and adjacent Tabasco, characterized by absence of supra-anal tubercles in males, narrow black rings covering one to three ventrals, and red ventrals with small black spots sometimes regularly paired on each ventral plate; ventrals 192–207 and caudals 42–55 in males, 206–221 and 33–41 in females.

Micrurus crebripunctatus (Peters) is an exact synonym. A few specimens from British Honduras differ from the above diagnosis in the absence of ventral black spots, and they overlap the range of *M. a. stantoni*. Their interpretation depends on further studies of habitat and range in these forms. *Micrurus hippocrepis* (Peters) is tentatively referred here.

Micrurus diastema (Duméril and Bibron) was based in part on this form, but is restricted in the present paper to the west Mexican coral snake, which corresponds much better with the description.

Range.—Vera Cruz and adjacent Puebla to British Honduras and northern Guatemala.

Micrurus affinis stantoni subsp. nov.

Type from Belize, British Honduras. No. 4201 Field Museum of Natural History. Adult male. Collected by W. A. Stanton, S. J.

Diagnosis.—A coral snake with black, yellow, and red rings, the black not arranged in triads; no supra-anal tubercles in males; black rings 21–28; a considerable proportion of undivided sub-caudals (3–26 in 13 out of 22 specimens); more than 50 per cent of

the specimens have temporals 1-2; ventrals 199-213 and caudals 43-57 in males, 218-226 and 32-43 in females; black rings tending to be open ventrad.

Allied in temporal and subcaudal characters to the adjacent *M. a. mayensis*, it is distinguished by the much larger number of black rings. Allied also to *M. a. affinis* in the other direction.

Paratypes.—Field Museum of Natural History Nos. 4202-4 and 4254; British Museum Nos. Cc and Cd (specimens from Belize collected by O. Salvin and J. Gegg) and 1890.9.8.5; United States National Museum Nos. 16398, 56611, and 71784; Museum d'Histoire Naturelle, Paris, Nos. 4614 and 4614J; Museum of Comparative Zoology Nos. 8202 and 19970; one specimen in the Naturhistorisches Museum, Vienna (without number); and Museum of Zoology, University of Michigan, No. 73228.

Range.—Campeche to British Honduras.

Micrurus affinis mayensis subsp. nov.

Type from Chichen Itza, Yucatan. No. 31872 Museum of Comparative Zoology. Adult male. Collected March 17, 1930, by Dr. George H. Shattuck.

Diagnosis.—A coral snake with black, yellow, and red rings, the black not disposed in triads; no supra-anal tubercles in the male; a large proportion of the subcaudals undivided; temporals normally 1-2; black bands 3 to 5 ventrals in width, 10-18 on body, 3-6 on tail; yellow rings present; red scales uniformly tipped with black; ventrals 195-203 in males, 211-218 in females; tip of snout occasionally light; yellow band across parietals frequently constricted by encroachment of the black from both sides.

Allied to *M. affinis stantoni*, from which it differs most conspicuously in the low number of the black bands.

Paratypes.—Museum of Comparative Zoology Nos. 7247, 28749, 31871, and 31873-4; Museum of Zoology, University of Michigan, Nos. 73057-8; American Museum of Natural History Nos. 7865 and 38825; United States National Museum No. 46562; Academy of Natural Sciences, Philadelphia, No. 18258; and British Museum No. 1880.7.13.6.

Range.—Yucatan, Mexico.

Micrurus affinis apiatus (Jan).

Elaps apiatus Jan, Rev. Mag. Zool., 1858, p. 522, 1858.

Elaps aglaeope Cope, Proc. Acad. Nat. Sci. Phila., 1859, p. 344, 1859.

Elaps guatemalensis Ahl, Zool. Anz., 70, p. 251, 1927.

Type locality.—Vera Paz, Guatemala.

This subspecies is one of the most distinct of the Central American forms, characterized by absence of supra-anal tubercles, large number of black rings (30–60), and a square light spot on the tip of the snout. The type locality, given as Vera Cruz by Jan, is a *lapsus* for Vera Paz, as is shown by examination of the type in the Museum d'Histoire Naturelle in Paris, collected by Morelet. The ventrals are 202–217 and the caudals 49–56 in males, 218–229 and 36–43 in females. *M. guatemalensis* (Ahl) is an exact synonym, and *M. aglaeope* Cope, from Honduras, is probably also to be placed here, though very few specimens are as yet available from that country.

Range.—Alta Vera Paz, Guatemala, and highland of Honduras.

Micrurus fitzingeri (Jan).

Elaps fitzingeri Jan, Rev. Mag. Zool., 1858, p. 521, 1858.

Type locality.—Mexico.

Without examination of the types of this form, I am unable to reach a satisfactory conclusion as to its relations or geographic range. The head scaling and scale count agree most nearly with the *affinis* group. One of the cotypes of this species was said to be from the Vienna Museum. It is not now discoverable there.

Range.—Unknown, probably southern Mexico.

Micrurus ephippifer (Cope).

Elaps ephippifer Cope, Proc. Amer. Phil. Soc., 23, p. 281, 1886.

Type locality.—Pacific side of Isthmus of Tehuantepec, Mexico.

Three females from Oaxaca, including the type of *Elaps ephippifer*, agree in having a high number of ventrals, 225–232, and a very characteristic color pattern, the red zones being entirely occupied by black pigment dorsally, while remaining red on the ventral surface. The broad black dorsal saddles are separated from the normal black rings by rather broad yellow zones. Without male specimens it is impossible to place this form in its proper relationship; but the only other form known from Oaxaca, *M. nuchalis*, has ventrals 203–209 in females and 8 to 9 black rings on the body instead of 18 to 20 in the present form.

Range.—Oaxaca, Mexico.

Micrurus diastema diastema (Duméril and Bibron).

Elaps diastema (part) Duméril and Bibron, Erpétol. Gén., 7, p. 1222, 1854.

Elaps epistema Duméril and Bibron, idem, p. 1222, 1854.

Elaps diastema var. *michoacanensis* Dugès, La Naturelleza, (2), 1, p. 487, pl. 32, 1891.

Type locality.—Mexico (here restricted to Colima).

This form is defined and restricted to include the west Mexican coral snakes in which the black rings tend to disappear either by reduction in number, by loss of the ventral portion, or by constriction of the black on the sides, with ventrals 191 to 210 in males and 207 to 220 in females. The species is based on three cotypes in the Museum d'Histoire Naturelle in Paris; one of these, No. 4620, is clearly a west Mexican specimen, conforming with this series in detail, and this specimen is now selected as a lectotype, and the type locality restricted to Colima. *Micrurus epistema* (Duméril and Bibron) thus becomes a strict synonym, for it is based on a specimen in which the rings are reduced to dorsal spots, and this is the condition in three specimens definitely from Colima, and in six of the twelve specimens referred here.

Reduction of the black rings to spots in coral snakes is known from other areas, notably in *Micrurus bernadi* (Cope), known only from a single specimen from Hidalgo, and in *M. sapperi* (Werner), based on a Guatemalan specimen without definite locality. I have seen a specimen of this nature from Lancetilla, Honduras, from the center of the range of *M. nigrocinctus divaricatus*, and regard *sapperi* as based on a similar anomalous specimen of this race. *M. diastema michoacanensis* (Duges) is very inadequately described. Until the Mexican coral snakes become better known, it may be placed here.

Range.—Western Mexico from Nayarit to Oaxaca.

***Micrurus diastema distans* (Kennicott).**

Elaps distans Kennicott, Proc. Acad. Nat. Sci. Phila., 1860, p. 338, 1860.

Type locality.—Batosegatchie, Chihuahua, Mexico.

Specimens of *Micrurus* from Sinaloa agree excellently with Kennicott's type from Batosegatchie, southwestern Chihuahua, and are distinguished from the Colima form by a higher number of ventrals. These range from 208 to 216 in males, and from 222 to 225 in females. The number of black rings varies from 10 to 14. There are no supra-anal tubercles. There is a tendency to constriction of the black rings at the sides of the body as in *diastema*.

Range.—Sinaloa to southern Sonora and the Pacific drainage of Chihuahua, Mexico.

***Micrurus laticollaris* (Peters).**

Elaps marcgravi var. *laticollaris* Peters, Monatsber. Akad. Wiss. Berlin, 1869, p. 877, 1869.

Type locality.—Southern Mexico, probably Puebla.

Though known only from the three cotypes, this species cannot be placed with any of the other known Mexican forms. The black rings are arranged in triads, which number 6 to 8; in these the central black ring is separated from the accessory rings by a broad yellow zone. Supra-anal tubercles are entirely wanting in the large male cotype.

Range.—Southern Mexico.

Micrurus bernadi Cope.

Elaps bernadi Cope, Bull. U. S. Nat. Mus., 32, p. 87, 1887.

Type locality.—Zacualtipan, Hidalgo, Mexico.

The single specimen on which this species is based comes from Zacualtipan, Hidalgo, the northernmost record in eastern Mexico for a coral snake, south of the range of *M. fulvius tenere* in Tamaulipas. It is possible that the coloration of this specimen, in which the black rings are reduced to a series of dorsal spots, is an individual anomaly. It is not at all unlikely, however, that *bernadi* may prove to be a valid form even if this color pattern should not prove to be distinctive.

Range.—Zacualtipan, Hidalgo, Mexico.

Micrurus fulvius tenere (Baird and Girard).

Elaps tenere Baird and Girard, Cat. N. A. Rept., p. 22, 1853.

Type locality.—San Pedro of Rio Grande and New Braunfels, Texas.

This western subspecies of *M. fulvius* is characterized by very irregular distribution of the more profuse black spotting of the red zones. In typical *fulvius* the black spots in the red zones are usually concentrated into a pair of good-sized black spots.

Range.—Mississippi to northern Tamaulipas, Mexico.

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