

OCCASIONAL PAPERS OF THE MUSEUM OF  
ZOOLOGY

## UNIVERSITY OF MICHIGAN

ANN ARBOR, MICHIGAN

UNIVERSITY OF MICHIGAN PRESS

A TAXONOMIC STUDY OF THE RATSNAKES, GENUS  
*ELAPHE* FITZINGERII. THE SUBSPECIES OF *ELAPHE FLAVIRUFA* (COPE)

BY HERNDON G. DOWLING

THE nightsnake, as Mertens (1950) called *Elaphe flavirufa*, is a lowland form especially characteristic of the Gulf and Caribbean coasts of Mexico and Central America, found from southern Tamaulipas to Corn Island, Nicaragua (Map 1). It is known on the Pacific Coast from a single specimen (*Elaphe flavirufa matudai* Smith) collected in Chiapas. Its presence in this region probably indicates that the species has crossed the Continental Divide via the Isthmus of Tehuantepec.

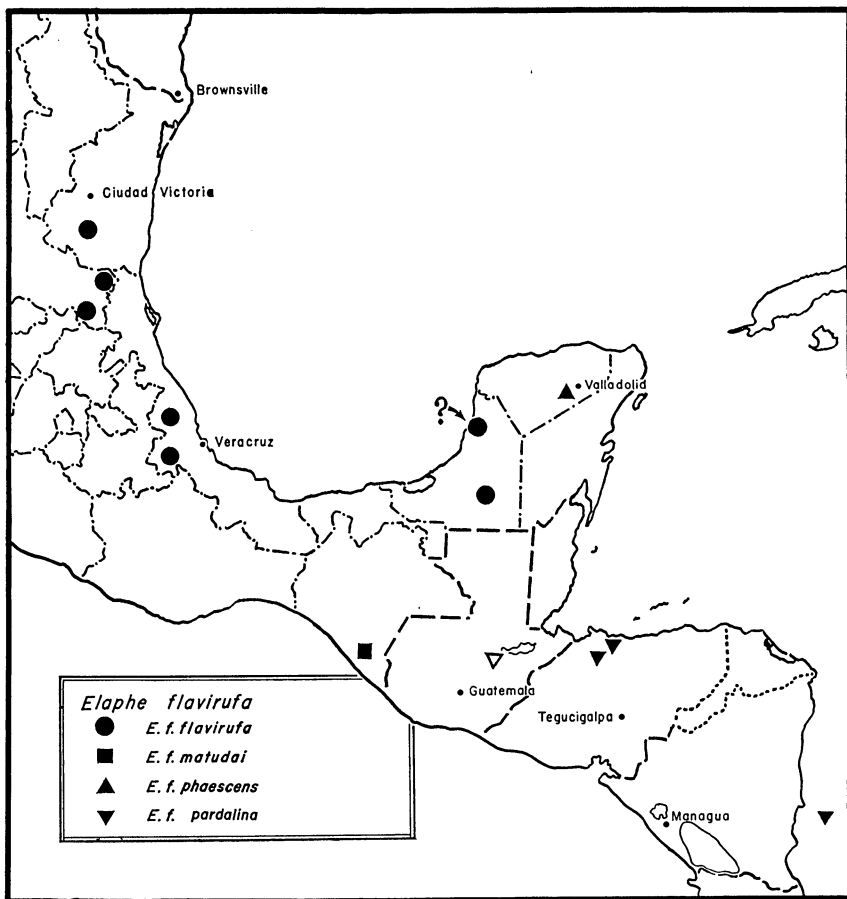
The type of hemipenis (*vide infra*) demonstrates that *Elaphe flavirufa* is most closely related to species in northern Mexico and the United States, rather than to the other neotropical species of the genus. As indicated by the color pattern and scutellation, its closest relatives are *E. guttata* (Linnaeus) and *E. emoryi* (Baird and Girard). The reddish brown, black-bordered blotches and distinct head pattern of *E. flavirufa* are found only in these two forms. Furthermore, the trends toward the south of increasing numbers of ventrals and caudals and increasing tail length and eye size which are observable in *E. emoryi* are continued in *E. flavirufa* (Fig. 1 and Table I).

*Elaphe emoryi* approaches *E. flavirufa* most closely in its characters and overlaps it to a slight extent geographically (in southern Tamaulipas and eastern San Luis Potosi). In the area of overlap, however, as well as in other areas, the differences between the two forms are distinct and are too great to indicate subspecific relationship. *Elaphe flavirufa* has some 20 more ventrals, at least three more maxillary teeth, and an additional (a third) labial entering the orbit.

DIAGNOSIS.—*Elaphe flavirufa* differs from *E. rosaliae*, *E. subocularis*, and *E. triaspis* in hemipenial characters: the presence of two distal lobes (absent in all three), and the absence of proximal spinules (present in the first two) and basal hooks (present in the last). It differs

from the more closely related forms to the north in the greater number of ventrals (more than 245 in males, more than 250 in females), in the almost immaculate ventral surface (somewhat mottled with gray posteriorly in old individuals), and usually in the entrance of three (rather than two) labials into the orbit.

MATERIAL.—A total of only 23 specimens has been made available



MAP 1. Distribution of the subspecies of *Elaphe flavirufa*.

for this study; perhaps 10 more have been reported in the literature. This is a very poor representation for a species of such wide geographic range, and the scarcity of material may be accounted for in part by the location of the range of the species on the Gulf and Caribbean coasts where comparatively little collecting has been done. This does not fully explain the situation, however, since only five specimens are

available from the much visited ruins of Chichén Itzá, Yucatán, where more than 30 specimens of *Elaphe triaspis* have been collected. The explanation appears to lie mainly in the nocturnal habits of the species, which have been well described (for a captive snake) by Mertens (1950).

DESCRIPTION OF SUBSPECIES.—With so few specimens the recognition of four subspecies (of which one is herein described) may seem injudicious. The differences are so pronounced, however, that they may lead (and sometimes have led) workers to describe them as distinct species. Each of the forms described is distinct from the others, a situation not improbable on the basis of inadequate material; in none (with the possible exception of *E. flavirufa matudai*) does it appear that a mere local variation has been recognized, or one within a clinal pattern.

*Elaphe flavirufa flavirufa* (Cope)

*Coluber flavirufus* Cope, 1867: 319 (original description; "Yucatan").

*Elaphe flavirufa* (Cope), Gage, 1936: 299 [*partim*] (scutellation; Tuxpeña Camp, Campeche).

*Elaphe flavirufa flavirufa* (Cope), Smith, 1941: 132, Fig. 2 (description; eastern Mexico).

*Elaphe (Pseudoelaphe) flavirufa* (Cope), Mertens and Rosenberg, 1943: 60–63 (habits in captivity; description of new subgenus).

DEFINITION.—A subspecies of *Elaphe flavirufa* characterized by 33 to 42 light reddish brown, black-bordered body blotches which extend laterally to scale rows VI, VII, or VIII (Pl. 1a); a single preocular; dorsal scale counts varying from 25+27+19 to 27+31+21; dorsals smooth laterally to row VIII.

LOCATION OF TYPE SPECIMENS, AND TYPE LOCALITY.—The holotype is USNM 6566, collected in "Yucatan" (*vide infra*) by Arthur C. V. Schott. There is also a paratype, USNM 6626, which was collected in Tabasco by Dr. H. Berendt.

The type locality of "Yucatan" was apparently merely an indication that the specimen was collected somewhere on the peninsula. Smith and Taylor have recently (1950: 352) restricted the type locality to Chichén Itzá, Yucatán, but I find this allocation to be untenable since the form found there (of which I have seen five specimens) is not the one named by Cope. Instead, it appears advisable to restrict the type locality provisionally to the vicinity of Campeche, Campeche. Schott is known (Kellogg, 1932: 8) to have collected in this area, and there is a specimen (UMMZ 73224) known from the vicinity of Tuxpeña, some 100 miles to the south-southwest, which resembles the type in all important respects.

Dr. L. C. Stuart has pointed out to me a parallel situation in *Anolis humilis uniformis*, which was also described from the Schott "Yucatan" collection and which has not since been found beyond the tropical rain-forest areas at the base of the Yucatán Peninsula.

DESCRIPTION OF TYPE.—The holotype is a juvenile male with the following characters: supralabials, 9–10 (labials IV to VI and V to VII entering the orbit); infralabials, 13–13; oculars, 1+2; temporals, 2+3+5; gulars, 3. The dorsal scale formula is:

$$\begin{array}{cccccc} 5+6(8) & +7(60) & -7(149) & 4+5(160) & -5(181) & \\ 27 & -25 & -27 & -25 & -23 & -21 \quad (256). \\ 5+6(7) & +7(60) & 7+8(151) & -6(159) & -6(182) & \end{array}$$

The dorsals are smooth laterally to row VIII. The supracaudal reduction on the posterior part of the tail is:

$$\begin{array}{cccc} 3+4(47) & 2+3(92) & 1+2(115?) & \\ 8 & -6 & -4 & -2 \quad (119 + \text{tip}). \\ 3+4(47) & 2+3(95) & 1+2(115?) & \end{array}$$

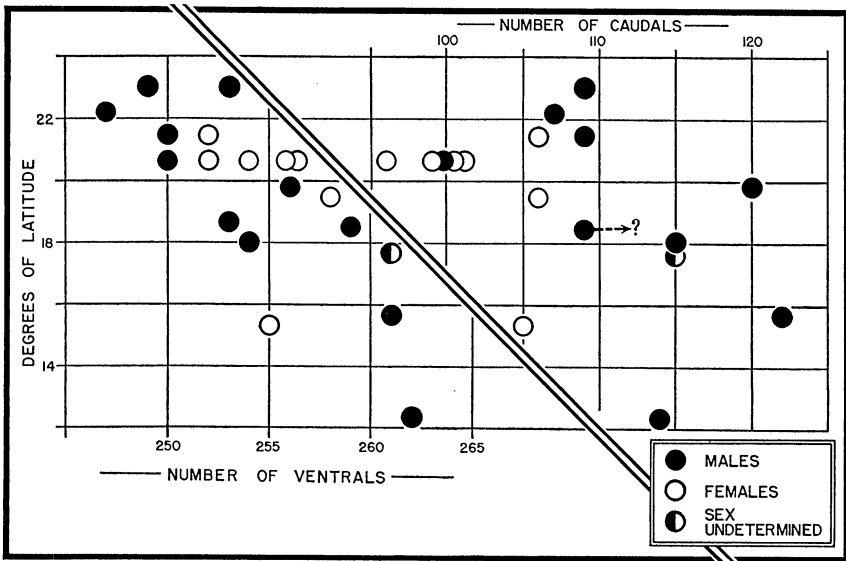
There are 41 body blotches, which extend laterally to scale rows VI or VII at mid-body, and 24 tail blotches. The body length is about 440 mm. (twisted); tail length, 125; head length, 19.3; eye, 3.9.

DESCRIPTION OF SUBSPECIES.—There are 11 specimens available,<sup>1</sup> of which only two are females. These snakes are from widely scattered localities extending from Tamaulipas to Campeche, but are rather constant in their characters. The only recognizable indication of geographic variation is in the slightly fewer ventrals and caudals of the northernmost individuals. There is little sexual dimorphism indicated in the specimens available. The two females have a few more ventrals and fewer caudals than do the males from their general area, but in both characters the difference appears to be about five scutes, or possibly even fewer.

<sup>1</sup>On April 25, 1952, Dr. Hobart M. Smith, Museum of Natural History, University of Illinois, made available five additional specimens of this subspecies, bringing the total number studied to 16. One of these (UIMNH 17687) is recorded as coming from "Tehuantepec, Oaxaca," and if the locality data are correct, this represents the second known specimen of this species from the Pacific side of Middle America. It shows no approach to the other specimen (*E. flavirufa matudai* Smith) in the width of its dorsal body blotches, none in the present individual extending below dorsal row VI.

The other four specimens are from eastern San Luis Potosí and southern Tamaulipas (UIMNH 19273–76) and resemble the previous specimens from that area in all important respects (ventrals 249, 250, 251, 256; caudals 108 [male], 102 [female]; dorsal body blotches 33, 34, 37, 38; oculars 1+2 in all specimens; UIMNH 19274 with right preocular partly divided).

The body is of moderate thickness and tapers distinctly toward either end. The tail is long (24 to 28 per cent of body length in the few measurable specimens), and the head is distinct from the slender neck (making up *ca.* 4.5 per cent of body length in juveniles, *ca.* 3 per cent in adults). The largest specimen (CNHM 1452) has a body length of about 1320 mm., but it cannot be measured accurately nor can the sex be determined because of the condition of the specimen. A somewhat smaller specimen (KUMNH 24078) is an adult male with a body



dorsal series are oval lateral blotches of similar coloration, which extend upward from the ventrals to scale rows VII to IX. A smaller series on the ventral edges and on the first one or two scale rows, one to two ventrals in length, both alternates with and opposes the lateral row. In young individuals and in those of moderate size, the ventral surface is immaculate (creamy white) below the angle of the ventrals except for a few scattered spots and some stippling posteriorly. In larger and older individuals, however, the posterior ventral surface is mottled with gray. The head pattern is visible, but is broken into small spots in the specimens at hand. A narrow postorbital band is present, but this breaks up and ends on the supralabials.

The dorsal scales are quite smooth, and keels are not visible below scale row VII in any of the specimens. The dorsal counts are variable, but the minimum anterior count is 25 in nine of the specimens; 27 in two. The maximum mid-body count is 27 (one specimen), 29 (seven), 30 (one), or 31 (two). The minimum posterior count is 19 (two specimens), 21 (eight), or 23 (a female). The scale formula of the type specimen (given above) differs from others only in the low mid-body count.

RANGE.—Specimens have been examined from the following localities: Campeche, Distrito Champoton, Tuxpeña Camp (UMMZ 73224); San Luis Potosí, 10 miles west of Ebano (KUMNH 24078); Xilitla region (LSUMZ 271-72); Tabasco (USNM 6626, paratype); Tamaulipas, Distrito Sur, *ca.* five miles northeast of Gomez Farias (UMMZ 104046-47); Veracruz, Distrito Acayucán, Achotal (CNHM 1452); Mirador (USNM 24998); Distrito Cordoba, Potrero Viejo [eight miles ESE Cordoba] (USNM 110302). "Yucatan" [probably actually Campeche] (USNM 6566).

*Elaphe flavirufa matudai* Smith

[?] *Coluber flavirufus* Cope, Ferrari-Perez, 1886: 185 (listed; Chiapas?).

*Elaphe flavirufa matudai* Smith, 1941: 132-34 (original description).

DEFINITION.—A subspecies of *Elaphe flavirufa* characterized by body blotches (35 in the single known individual) of the dorsal series which extend laterally to dorsal row III.

LOCATION OF TYPE SPECIMEN, AND TYPE LOCALITY.—USNM 110303, collected at Salto de Agua (1200 feet altitude) on Cerro Ovando, four miles northeast of Escuintla, Distrito Soconusco, Chiapas, by Hobart M. Smith, on May 19, 1940.

DESCRIPTION OF TYPE.—The unique specimen of this form is an adult female. It is distinguished from other known specimens of *E. flavirufa*

by the appearance of the 35 dorsal blotches, which are broadened so that they extend to the second or third lateral row of dorsals (Pl. Ib). This specimen has 104 caudals and  $15 \pm$  tail blotches. The preoculars are 2-1; postoculars, 2-2; temporals, 3+3+3, and 2+3+4; supralabials, 10-10; infralabials, 13-?, the right side scarred. The dorsal scale formula is:

$$\begin{array}{cccccc}
 5+6(10) & +7(53) & +8(87) & -6(137) & -7(146) & -5(157) \\
 27-25 & -27 & -29 & -27 & -25 & -23 \\
 5+6(9) & +6(49) & +8(94) & -6(136) & -7(147) & 5+6(156) \\
 & 5+6(228) & & & +5(249) & -5(253) \\
 -23 & -21 & -22 & -21 & -23 & -21 \quad (255). \\
 & 5+6(228) & +5(232) & -5(237) & +5(249) & -5(253)
 \end{array}$$

The body is stiff and cannot be measured accurately, but has a length of about 1135 mm.; tail length, 295; head length, 38.6; eye, 5.9. Other data are contained in the original description.

DISCUSSION.—This is the only specimen of the entire species group known from the Pacific Coast, and it is impossible to determine at present whether either the division of the preocular or the extraordinary width of the dorsal blotches is unusual in the population from which it came. If only the divided preocular is unusual, this population may be retained as a separate subspecies on the basis of pattern differences. If the width of the blotches is an unusual character in the population, however, the population is probably an intergrading one between *E. f. flavirufa* and *E. flavirufa pardalina* and should not be accorded nomenclatural recognition.

In this respect it should be noted that occasional specimens of *E. g. guttata* from southern Georgia and Florida display a pattern similar to *E. flavirufa matudai*. This is caused by fusion of the dorsal blotches and the lateral spots and occurs erratically in the region, being characteristic of no population. Since this situation occurs in a closely related form, it is obvious that the status of *E. flavirufa matudai* is far from settled.

RANGE.—KNOWN only from the type locality (type examined): Chiapas, Distrito Soconusco, Salto de Agua on Cerro Ovando [four miles northeast of Esquintla] (USNM 110303).

### *Elaphe flavirufa phaescens*, new subspecies

*Elaphe flavirufa* (Cope), Gaige, 1936: 299 [*partim*] (scutellation; Chichén Itzá, Yucatán).

DEFINITION.—A subspecies of *Elaphe flavirufa* characterized by the small number (29 or 30 in the five known specimens) and dark color





that the tail is somewhat shorter, averaging about 24.5 per cent of the body length. The adult male (UMMZ 73073) has a body length of about 965 mm., and a tail length of 237 mm. The other specimens range in body length from 492 mm. to 601 mm.

The coloration is quite different from that of the other three subspecies. The adult has dark chocolate-brown blotches on a grayish tan ground color. In the juveniles the blotches are not so dark (though much darker than in the other forms), but each scale within the blotch is outlined with brown; the lighter centers of the blotches grade into an ill-defined dark border about two scales wide. The blotches of the dorsal series are elongate, especially anteriorly, and the mid-body blotches are 9 to 11 scales long and extend downward to about scale row IX. On the anterior part of the body (and sometimes on the posterior part as well) the dorsal blotches have longitudinal extensions from each side, giving them a concave appearance rather than the rounded oval shape found in the other subspecies (Pl. Ic). The head pattern is similar to that of the other forms, but less broken up (Fig. 2).

The dorsal scales are more strongly keeled than in the other subspecies. Only the first three scale rows are smooth in the adult, the first four to seven in the juveniles. As previously indicated, this form has more scale rows than the others, the scale counts being 29+31+23 in the male, and 29+31+25 in the four females (Table I).

REMARKS.—The name of this subspecies is derived from *phaeus* (Gr., "dusky") and the termination *-scens* ("becoming"), indicating its darkened appearance as compared with the other forms. It is interesting that this, the darkest form, is found in the driest area occupied by the species.

RANGE.—This form is known only from the type locality. It probably replaces the typical form in the outer drier areas of the peninsula, *E. f. flavirufa* being restricted to the rain-forest region near its base. Specimens examined are from Yucatán, Distrito Valladolid, Chichén Itzá (UMMZ 73074, holotype; MCZ 29241, UMMZ 73072-73, USNM 46578, paratypes).

*Elaphe flavirufa pardalina* (Peters)

*Elaphis pardalinus* Peters, 1868: 642 (original description).

*Elaphis rodriguezii* Bocourt, 1887: 168 (original description; type locality Panzos, Alta Verapaz, Guatemala; type MHNP 88-154).

DEFINITION.—A subspecies of *Elaphe flavirufa* characterized by horizontally divided preoculars and a large number of ventrals (usually more than 260).

TABLE I  
Variation in the Four Subspecies of Elaphe flavirufa

Subspecies	Sex	Dorsals	Oculars	Supra-labials	Labials in Orbit	Infra-labials	Smooth Rows	Blotches	Mx	Body Length	T/B	H/B	E/H
<u>E. f. flavirufa</u>													
UMMZ 104046	♂	25+29+19	2+2; 1+2	18	IV, V, VI	26	7	38+18	21	620	27.58	3.89	17.01
UMMZ 104047	♂	25+29+21	2+2; 1+2	18	IV, V, VI	25	8	37+?	22	770	?	3.73	16.72
KUMNH 24078	♂	25+29+19	1+2	18	IV, V, VI	26	7	33+15	21	1225	23.84	3.11	15.49
LSUMZ 271	♂	25+29+21	1+?	18	IV, V, VI	?	8	35+18	?	[490]	?	?	?
USNM 110302	♂	27+31+21	1+2	18	IV, V, VI	26	11	35+17?	?	[700]	?	?	?
USNM 6626	♂	25+29+21	1+2	18	IV, V, VI	28	?	42+19	22	[435]	?	?	17.24
UMMZ 73224	♂	25+29+21	?	18	IV, V, VI	?	9	35+?	21	[990]	?	?	?
USNM 6566	♂	25+27+21	1+2	19	IV, V, VI- V, VI, VII	26	8	41+24	?	[440]	?	?	20.21
LSUMZ 272	♀	27+31+23	1+2	19	?	29	8	35+17	22	972	26.95	3.57	15.85
USNM 24998	♀	25+30+21	1+2	19	IV, V, VI- V, VI, VII	25	8	39+20	?	414	27.78	4.64	20.31
CNHM 1452	?	25+29+21	1+2	18	?	26	8	38+19	?	[1320]	?	?	?

TABLE I (Cont.)

<u>E. flavirufa</u> <u>matudai</u>	♀	25+29+21	2+2; 1+2	20	V, VI, VII	?	8	35+15?	?	[1135]	?	?	15.28
USNM 110303													
<u>E. flavirufa</u> <u>phaescens</u>	♂	29+31+23	1+2	18	V, VI	25	3	29+12	?	[965]	?	?	?
UMMZ 73073													
UMMZ 73072	♀	29+31+25	1+2	19	IV, V, VI- V, VI, VII	26	6	30+16	23	527	24.48	4.54	18.41
UMMZ 73074	♀	29+31+25	1+2	18	V, VI	27	4	29+13	24	601	23.79	4.44	17.60
MCZ 29241	♀	29+31+25	1+2	19	IV, V, VI- V, VI, VII	28	4	29+14	?	492	25.41	4.70	19.05
USNM 46578	♀	29+31+25	1+2	18	IV, V, VI	26	7	30+13	22	542	24.35	4.39	17.65
<u>E. flavirufa</u> <u>pardalina</u>	♂	27+31+21	2+2	18	IV, V, VI	27	11	46+22	20	[500]	?	?	17.78
MCZ 29609													
AMNH 23887	♂	27+31+21	2+2	18	IV, V, VI	27	10	36+17	21	[930]	?	?	?
USNM 14848	♂	25+29+21	2+2	20	IV, V, VI	26	8	41+23	21	[1020]	?	?	16.57
MCZ 26853	♀	27+31+21	2+2	18	?	27	11	?	?	?	?	?	?
MCZ 22025	?	29? +? + ?	2+2	18	IV, V, VI	26	?	?	?	?	?	?	?
MCZ 21181	?	27+31 + ?	2+2	18	IV, V, VI	25	10	?	?	?	?	?	?

Note: B = body length; E = longitudinal diameter of eye; H = head length; Mx = number of maxillary teeth; T = tail length. Brackets indicate that the measurement is only approximate.

LOCATION OF TYPE SPECIMEN, AND TYPE LOCALITY.—The type is ZMB 3790, collected by "Münter" (*in litt.*, Wermuth). No type locality is known.

DESCRIPTION OF TYPE.—The type has 40 dorsal body blotches and about 20 tail blotches. The scutellation is as follows: oculars 2+2; temporals 3+4+5, 3+4+4; supralabials 9—9, IV to VI entering orbit; infralabials 12—12; gulars 3; ventrals 264 (information obtained from photographs of the type supplied by Dr. Wermuth). The original description gives the caudal count as 119 pairs; dorsal count 29.

DESCRIPTION OF SUBSPECIES.—Six specimens are available, four of these are from Honduras, one from Corn Island, Nicaragua, and one is without locality data.

In all of the specimens both preoculars are divided by a horizontal suture. This character appears in other forms of *Elaphe* with the utmost rarity (a single specimen of *E. triaspis* is the only specimen found, other than this subspecies, with both preoculars divided) and thus is highly characteristic of this subspecies. Three of the present specimens have the ventral series interrupted (two specimens are head and neck only), but the counts in the specimens of known provenience are 261 and 262 in the two males, and 265 in the type of *Elaphis rodriguezii* (a female). This is consistently above the ventral counts of the other three subspecies, and although they would probably overlap in larger series, a higher average number is certainly indicated.

These two characters, number of preoculars and number of ventrals, appear to be the only differences between this subspecies and *E. f. flavirufa*. The body form and coloration (Pl. Id) are almost identical in the two forms. The dorsal scale formula for the Corn Island individual (AMNH 23887), which does not appear to differ from those of mainland origin, is

$$\begin{array}{ccccccccc}
 8+9(7) & 5+6(13) & +7(56) & +9(94) & -8(128) & 5+6(144) & & & \\
 31 & \underline{\quad 29 \quad} & \underline{\quad 27 \quad} & \underline{\quad 29 \quad} & \underline{\quad 31 \quad} & \underline{\quad 29 \quad} & \underline{\quad 27 \quad} & \underline{\quad} & \\
 7+8(7) & 5+6(17) & +7(55) & +7(91) & -8(128) & 5+6(143) & & & \\
 & & -6(151) & 5+6(162) & 5+6(226) & & & & \\
 & & \underline{\quad 27 \quad} & \underline{\quad 25 \quad} & \underline{\quad 23 \quad} & \underline{\quad 21 \quad} & (262). & & \\
 & & -6(151) & 5+6(160) & 5+6(217) & & & & 
 \end{array}$$

Other items of scutellation and coloration are given elsewhere (Table I).

RANGE.—The type specimen of *Elaphis rodriguezii* Bocourt, from Panzos, Alta Verapaz, Guatemala (which was not available for study), is the only representative known from this northernmost locality. Specimens were examined from the following localities: Honduras,

Distrito Atlantida, Lancetilla (MCZ 29609); Distrito Yoro, Ulúa River, Garcia Plantation (MCZ 21181); Progreso (MCZ 22025, 26853); Nicaragua, Corn Island (AMNH 23887). No locality data (USNM 14848).

KEY TO SUBSPECIES OF *Elaphe flavirufa*

Although 23 specimens constitute an extremely small sample upon which to base a key to four forms of a species, I believe that the one presented below will allocate correctly all except intergrading or very unusual specimens. In case of questionable allocation, the table and figures should be consulted.

- |        |   |                               |
|--------|---|-------------------------------|
| 1      | Dorsal body blotches extending laterally to scale rows II or III at mid-body .....  | <i>E. flavirufa matudai</i>   |
| 1'     | Dorsal body blotches not extending below scale row V .....                          | 2                             |
| 2 (1') | Usually preoculars single, and fewer than 260 ventrals .....                        | 3                             |
| 2'     | Preoculars divided horizontally, giving 2, and usually more than 259 ventrals ..... | <i>E. flavirufa pardalina</i> |
| 3 (2)  | Fewer than 32 dorsal body blotches .....  | <i>E. flavirufa phaescens</i> |
| 3'     | More than 31 dorsal body blotches .....   | <i>E. flavirufa flavirufa</i> |

SUMMARY AND CONCLUSIONS

The nightsnake, *Elaphe flavirufa* (Cope) has four recognizable geographic races, of which two (*E. f. flavirufa* and *E. flavirufa matudai*) have been previously recognized; one is resurrected (*E. flavirufa pardalina*); and one is herein described as new (*E. flavirufa phaescens*). Of the four, the last, found on the Yucatán Peninsula, differs in a greater number of characters, and indicates a greater degree of isolation than the others.

ACKNOWLEDGMENTS.—This paper is adapted from part of a dissertation submitted to the University of Michigan in 1951.

I wish to express my appreciation to Dr. Norman Hartweg and Dr. Charles F. Walker, Division of Reptiles and Amphibians, and to Dr. J. Speed Rogers, director of the Museum, for the privilege of working at the University of Michigan Museum of Zoology (UMMZ). I wish to thank Mr. William L. Brudon, staff artist of that institution, for the fine drawings which are used herein. Thanks are due Dr. Emmett R. Dunn, Haverford College, for his critical perusal of the manuscript. I also wish to thank the following persons and institutions for the loan of specimens and for other kindnesses: Dr. L. C. Stuart, Laboratory of Vertebrate Biology, University of Michigan; Dr. Charles M. Bogert, American Museum of Natural History (AMNH); Mr. Clifford H. Pope and Dr. Karl P. Schmidt, Chicago Natural History Museum (CNHM); Dr. Edward H. Taylor, Museum of Natural History, University of

Kansas (KUMNH); Dr. George Lowery, Museum of Zoology, Louisiana State University (LSUMZ); Mr. Arthur Loveridge, Museum of Comparative Zoology, Cambridge (MCZ); M. Jean Guibé, Museum d' Histoire Naturelle, Paris (MHNP); Dr. Doris M. Cochran, U.S. National Museum (USNM); and Dr. Heinz Wermuth, Zoologisches Museum der Humboldt-Universität, Berlin (ZMB).

## LITERATURE CITED

- BOCOURT, F.  
1887 Note sur un ophidien nouveau, appartenant au groupe des colubiens provenant du Guatemala. *Elaphis* (1) *Rodriguezii*. Le Naturaliste, p. 168.
- COPE, EDWARD D.  
1867 Fifth Contribution to the Herpetology of Tropical America. Proc. Acad. Nat. Sci. Philadelphia, 18: 317-23.
- FERRARI-PEREZ, FERNANDO  
1886 Catalogue of Animals Collected by the Geographical and Exploring Commission of the Republic of Mexico. Proc. U.S. Nat. Mus., 9: 125-99.
- GAIGE, HELEN T.  
1936 Some Reptiles and Amphibians from Yucatan and Campeche, Mexico. Carnegie Instit. Washington Publ., No. 457: 289-304.
- KELLOGG, REMINGTON  
1932 Mexican Tailless Amphibians in the United States National Museum. Bull. U.S. Nat. Mus., 160: 1-224 + iv, Pl. 1, Figs. 1-24.
- MERTENS, ROBERT  
1950 Nachruf auf eine mexikanische Nachtnatter, *Elaphe flavirufa*. Deutsche Aquarien- und Terrarien Zeitschr., 3 (5): 75-76, 1 fig.
- MERTENS, ROBERT, and HANS ROSENBERG  
1943 *Elaphe flavirufa* (Cope), die mexikanische Nachtnatter. Wochenschr. (Blätter) f. Aquarien- und Terrarienkunde, Hft. 3: 60-62 [18-20], 3 figs.
- PETERS, W.  
1868 Ueber einige neue oder weniger bekannte Amphibien. Monatsber. Akad. Wiss. Berlin. Pp. 449-53, 640-42.
- SMITH, HOBART M.  
1941 Notes on Mexican Snakes of the Genus *Elaphe*. Copeia, 3: 132-36, 2 figs.
- SMITH, HOBART M., and EDWARD H. TAYLOR  
1950 Type Localities of Mexican Reptiles and Amphibians. Univ. Kans. Sci. Bull., 33, pt. 2 (8): 313-80.
- TAYLOR, EDWARD H.  
1940 Some Mexican Serpents. Univ. Kans. Sci. Bull., 26 (14): 445-87.

*Department of Biology, Haverford College, Haverford, Pennsylvania*

*Submitted for publication December 1, 1951*

## PLATE I.

Color patterns in the mid-body region in the four subspecies of *Elaphe flavirufa*: a. *E. f. flavirufa*; b. *E. f. matudai*; c. *E. f. phaescens*; d. *E. f. pardalina* (b redrawn from Smith, 1941, Fig. 2; others drawn from preserved specimens).

PLATE I

