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NOTES ON AMPHIBIANS AND REPTILES OF MICHOACAN, MEXICO

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During the summers of 1938 to 1941, inclusive, Mr. Harry Hoogstraal, while a graduate student at the University of Illinois, led successive biological expeditions into Mexico, with the object of making general collections of plants and animals for study, and with the special purpose of studying the distribution of animal life in the different biotic provinces of Mexico. Through the kind assistance of Professor B. V. Hall, of the University of Illinois, Department of Zoology, the junior author was included as herpetologist in the expeditions of 1940 and 1941.

In these years the considerable field party made its base at Tancítaro, a village on the north side of the Cerro de Tancítaro in Michoacan. This mountain is a somewhat isolated but massive outlier of the Mexican plateau, connected with it by ridges descending to an altitude of about five thousand feet. On the south, Mount Tancítaro slopes directly to the hot and arid valley of the Rio Tepalcatepec, an affluent of the Rio Balsas. Mr. Hoogstraal's choice of this area for study had the obvious merit of making possible a description of the altitudinal zones ranging from the valley floor at 1,000 feet to the peak of Mount Tancítaro at nearly 12,000 feet. Such zonal studies of plant and animal life have been elaborately developed in the western United States, especially by Joseph Grinnell and his students, and for certain groups and limited regions in the American tropics by Frank M. Chapman and others. The radical differences discernible between the "life zones" of the tropical Andes and those of the Rocky Mountains and Sierra Nevada of California suggest that important results may be obtained from ecological studies in Mexico and Central America. Such studies, in mountain regions,

inevitably fall into the life-zone pattern (see, for example, *The Guatemalan salamanders of the genus Oedipus*, by the senior author, 1936).

With the assistance of Mr. Hoogstraal, the late William C. Leavenworth, botanist on the Michoacan expeditions, prepared an ecological study based on the accumulated collections and observa-



FIG. 8. Location of Tancitaro-Apatzingan area in Mexico.

tions and entitled *A preliminary study of the vegetation of the region between Cerro Tancitaro and the Rio Tepalcatepec, Michoacan, Mexico*. Messrs. Emmet R. Blake and Harold Hanson have reported on the birds of the same transect (1942), with some description of the altitude zones established by studies of the vegetation.

The greater part of the collections of amphibians and reptiles made in the Apatzingan-Tancitaro transect in 1940 and 1941 were made by the junior author, but his collecting was supplemented by specimens from every member of the two expedition parties. In addition to Messrs. Hoogstraal, Leavenworth, and Hanson, we are in-

debted especially to Messrs. Ralph Haag, Reed Fautin, F. C. Wonder, Robert Traub, and F. Schacht, and Miss Catherine Hoogstraal.

In the preparation of the following report the junior author has identified the majority of the species at the University of Illinois, with the aid of Dr. Hobart M. Smith in certain groups. He is indebted to Drs. V. E. Shelford and Carl G. Hartman, of the Department of Zoology, and to Dr. L. A. Adams, Curator of the Museum of Zoology, for many helpful suggestions. Dr. B. V. Hall has very generously permitted the free use of his fine library. Señor Carlos Ortiz Romero, a government engineer from Mexico City, not only shared his quarters at Hacienda California with the junior author but aided in making collections. His skill with the rifle made many additions to the collection. Señor Mendes, postmaster at Tancítaro, greatly facilitated work in a town unvisited by gringos for thirty years. Mr. Robert Urbano was of great help in sorting and labeling specimens. The senior author has revised the entire manuscript, and has consulted especially with Dr. Smith and Dr. Edward H. Taylor on various problems.

Various officials of the Mexican government and of the United States foreign service were generous in their aid to the two expeditions. Dr. A. C. Baker, of the United States Department of Agriculture, was especially helpful to us in making the official arrangements for the work.

The localities mentioned are in the municipalities of Apatzingan and Tancítaro. Those of Apatzingan are Apatzingan (the town itself), El Capire, Acahuato, La Majada, and Hacienda California. In Tancítaro are Tancítaro (the town itself), Cerro Tancítaro, and El Soledad.

AMPHIBIA

CAUDATA

Oedipus bellii Gray

Spelerpes bellii Gray, Cat. Batr. Grad., p. 46, 1850.

Oedipus belli Dunn, Bull. Mus. Comp. Zool., 62, p. 471, 1918.

Seventy-five specimens are from Tancítaro, Michoacan, all but one from the immediate vicinity of the village. This large series agrees excellently with Dunn's description of this widespread species.

These specimens, including many juveniles, were taken during the month of June, July, and August of 1940 and 1941. The smallest juvenile measures 32 mm., tail 10 mm.; this must be about the size

at hatching. Fruitless efforts were made to discover the eggs. One female contained eggs, some of which seemed to be mature.

Some specimens were found in houses at the village. Others were found beneath stones, damp logs, and beneath unused blocks of adobe. One was discovered on the side of Mount Tancítaro at an altitude of 7,800 feet, under pine needles dry at the surface but wet beneath.

SALIENTIA

Bufo marinus Linnaeus

Rana marina Linnaeus, Syst. Nat., ed. 10, 1, p. 211, 1758—America.

Bufo marinus Schneider, Hist. Amphib., pt. 1, pp. 219–222, 1799.

Specimens of the marine toad obtained in Michoacan appear to have been lost. This toad is common around the homes and in the patios of Apatzingan.

Bufo marmoreus Wiegmann

Bufo marmoreus Wiegmann, Isis, 26, p. 661, 1833—Vera Cruz, Mexico.

Nine specimens were collected by the junior author at Apatzingan, July 21 to August 20, 1941.

Bufo monksiae Cope

Bufo monksiae Cope, Proc. Amer. Phil. Soc., 18, p. 263, 1879—Guanajuato, Mexico.

Ten specimens were taken in the vicinity of Tancítaro.

The supraciliary crests tend to converge anteriorly, while diminutive parietal crests converge posteriorly; postorbital crests short or absent; parotoid glands well-developed, bean-shaped; skin strongly tuberculate; tympanum indistinct or invisible. The largest specimen has a head and body length of 86 mm.; the smallest, 22 mm.

The ground color varies from gray, tinged with red, to deep rusty red. Darker dorsal markings usually black, sometimes absent; abdomen usually rather free from mottling, some specimens liberally mottled with dark gray; a whitish interorbital crossband more evident in juvenile specimens; faint interrupted vertebral stripes; limbs and feet banded in some specimens.

We do not follow Kellogg (1932) in his reference of this widespread species to *Bufo simus* Schmidt of Panama, since there is no record for the species in the intervening territory and no doubt as to the provenience of Schmidt's types; combined with the fact that

these specimens were juvenile, it is reasonable to suppose that they represent a toad of lower Central America. *Bufo intermedius*, an Ecuadorean species, is similarly excluded.

Hyla baudinii Duméril and Bibron

Hyla baudinii Duméril and Bibron, *Erpét. Gén.*, 8, pp. 564–565, 1841—Mexico.

Twenty-five specimens from the immediate vicinity of Apatzingan, collected between July 21 and August 17, mostly at night, either on the edge of quiet pools or in the water. Many taken were in amplexus.

The largest specimen measures 64 mm. from snout to vent. Vocal sacs are well developed. The ground color in this series of specimens varies from a light brown to a rather intense olive-green. Black dorsal blotches are usually present, but some blotches are gray with black edges and some a uniform grayish green. A dark band extends from the nostril, through the eye and tympanum; terminating in a somewhat wider black spot behind the shoulder. The interorbital region bears a transverse band, and there is a black spot beneath each eye. Most specimens have the legs strongly banded, and the arms less distinctly banded.

Hyla smithii Boulenger

Hyla nana Günther, *Biol. Centr.-Amer.*, Reptilia and Batrachia, p. 263, 1901—Cuernavaca, Mexico.

Hyla smithii Boulenger, *Zool. Rec.*, 38, Rept. Batr., p. 33, 1902; Taylor, *Trans. Kans. Acad. Sci.*, 39, pp. 357–359, pl. 2, 1936.

Fifteen specimens (eleven males and four females) of the tiny *Hyla smithii* were taken at night, at La Majada, five miles north of Apatzingan, mostly on leaves of floating water-hyacinth.

These specimens agree excellently with Taylor's description. The toes are all more than half webbed. The bright yellow back showed few signs of pigmentation in life (and at night), although alcoholic specimens have varying amounts of dorsal pigmentation. No specimens were seen during the day. Abdomen white, purple in a single specimen.

Rana pipiens Schreber

Rana pipiens Schreber, *Naturf.*, 18, p. 185, pl. 4, 1782—New Jersey and New York.

Nine leopard frogs were taken near Apatzingan, mostly at night and in almost every type of aquatic habitat.

We avoid the complicated problem of a partition of the Mexican forms of *Rana pipiens* into races. The senior author believes that *berlandieri* (type locality Brownsville, Texas) is the earliest available name for the continuous population of lowland eastern Mexico.

Leptodactylus labialis Cope

Cystignathus labialis Cope, Proc. Amer. Phil. Soc., 17, p. 90, 1877—Mexico.

Leptodactylus labialis Ives, Proc. Acad. Nat. Sci. Phila., 1891, p. 461, 1891.

Twelve specimens from Apatzingan, eight males and four females. All but one were taken at night, commonly along the sides of roads, near pools of water. Most of them concealed themselves in cow tracks, and their calm, serene "oik" contrasted strangely with the noisy clatter of *Hyla baudinii* and *Rana pipiens*.

Leptodactylus melanonotus Hallowell

Cystignathus melanonotus Hallowell, Proc. Acad. Nat. Sci. Phila., 1860, p. 485, 1860—Nicaragua.

Leptodactylus melanonotus Brocchi, Miss. Sci. Mex., Batr., p. 20, 1881.

Sixty-three specimens were taken in the general vicinity of Apatzingan, during the last third of July and the first half of August. All were taken in treeless flat country. The largest specimen measures 45 mm. In evidence by day as well as at night, they are found mostly in puddles or small streams choked with grass. Several specimens were found in deep cow-tracks.

Tomodactylus angustidigitorum Taylor

Tomodactylus angustidigitorum Taylor, Univ. Kans. Sci. Bull., 26, pp. 494–496, pl. 55, 1940—Quiroga, Michoacan.

Six specimens were collected in 1940, and thirty in 1941, all from Tancítaro. Most of these were collected at night in the vegetation of the lava rocks of the pedregal. They were traced by the infrequent call of "beep."

Hoogstraal and Traub collected several specimens on the slopes of Mount Tancítaro at an altitude of 7,800 feet, in woodland and fields. They report that most specimens were found on rocks in fields, some in bushes, up to a height of five feet from the ground; a loud chorus (though weaker than that of lower altitudes) came from the edge of the woods near their camp; the chorus became weaker with increasing moonlight and was not heard on the night of the full moon, July 8; it was resumed a few nights later. A cluster of eggs and two specimens in amplexus were found beneath a rock.

The largest specimen measures 29 mm., slightly in excess of Taylor's maximum of 25 mm.

Phyllomedusa dacnicolor Cope

Phyllomedusa dacnicolor Cope, Proc. Acad. Nat. Sci. Phila., 1864, p. 181, 1864—near Colima.

One specimen taken on the edge of a quiet stream at La Majada, near Apatzingan.

REPTILIA

TESTUDINATA

Kinosternon cruentatum cruentatum Duméril

Cinosternum cruentatum Duméril, Cat. Méth. Rept., p. 16, 1851—North America.

Kinosternon cruentatum cruentatum Schmidt, Field Mus. Nat. Hist., Zool. Ser., 22, p. 488, 1941.

Six specimens taken at La Majada, near Apatzingan, August 6–18, 1941. All are from a well-shaded small stream in tangled low-land scrub-forest.

Geoemyda rubida Cope

Chelopus rubidus Cope, Proc. Amer. Phil. Soc., 11, p. 148, 1869—Tuchitan, Oaxaca.

Geoemyda rubida Siebenrock, Zool. Jahrb., Suppl., 10, p. 500, 1909.

Two specimens from near La Majada, collected August 6, 1941. Both specimens were collected on land near the shaded stream mentioned above.

SAURIA

Phyllodactylus tuberculosus Wiegmann

Phyllodactylus tuberculosus Wiegmann, Nova Acta Acad. Leop. Carol., 17, p. 241, pl. 18, fig. 2, 1834—California.

Three specimens were taken from the country surrounding Apatzingan in August, 1940, one from El Capire, one from Hacienda California, and one from near the town itself. From July 23 to August 10, 1941, eight specimens were taken in Apatzingan.

Individuals of this small nocturnal species secrete themselves in any damp, cool habitat. Nearly all the homes in Apatzingan serve as places of concealment. The lizards come out after dark, and search the adobe walls of the rooms for insects attracted by the lights.

The modified digits permit them to cling to the ceiling. The Mexicans believe this lizard to be even more deadly than the "*Escorpiona*," which term, in this area, applies usually to *Gerrhonotus*.

Basiliscus vittatus Wiegmann

Basiliscus vittatus Wiegmann, Isis, 21, p. 273, 1828—Mexico.

Four specimens from the municipality of Apatzingan, three from El Capire, and one from Hacienda California. These lizards were not seen far from water, or in any place lacking abundant vegetation.

This versatile lizard can run along the ground like *Crotaphytus* with forelegs elevated and tail curved upward; it can use all four legs; it can hop, or dance gracefully to one side; and it can run on water. One specimen was seen to run more than one hundred feet on the surface of quiet water. The long whip-like tail was carried above the water surface (to stabilize the body), but occasionally touched the water, perhaps to provide more surface area on which to distribute weight, and the front legs were folded against the body.

Anolis nebulosus Wiegmann

Dactyloa nebulosus Wiegmann, Herp. Mex., p. 47, 1834—Mexico.

Anolis nebulosus Bocourt, Miss. Sci. Mex., Zool., 3, sec. 1, p. 68, pl. 15, fig. 3, 1873.

Six specimens were taken several miles south of Tancítaro, during the summer of 1940; seven near Tancítaro, June 22 to June 29, 1941; and three near Apatzingan, between August 10 and 20, 1941.

These lizards were not abundant. They were found in hilly areas in grass, bushes, rocks, or stone fences. One was taken by a stream, and one was taken asleep, at night, draped over a limb with head and tail hanging down on either side. Apatzingan specimens were found on shrubs near water. *Anolis nebulosus* was only seen on clear days. Males extended their gular pouches only when sunning.

With the possible exception of *Masticophis lineatus*, this lizard is the only species of reptile to be found in both Tancítaro and Apatzingan.

Iguana iguana rhinolopha Wiegmann

Iguana rhinolopha Wiegmann, Herp. Mex., p. 44, 1834—Mexico.

Iguana iguana rhinolopha Dunn, Copeia, 1934, p. 1, 1934.

A large male specimen taken at Hacienda California measures an inch less than six feet.

These big green iguanas were seen only in the branches of large trees near rivers and streams, where they were decidedly difficult to see. When disturbed, some remained motionless while others dived noisily into the water.

***Ctenosaura pectinata* Wiegmann**

Cyclura pectinata Wiegmann, Herp. Mex., p. 42, pl. 2, 1834—Colima (restr. by Bailey, 1928).

Ctenosaura pectinata Gray, Cat. Lizards Brit. Mus., p. 191, 1845.

Three specimens from Hacienda California and two from near Apatzingan were taken in early August, 1940, and thirteen specimens were taken in late July and early August of 1941.

The young conceal themselves in grass and other green vegetation, and their vivid green coloration so closely matches that of their surroundings that it is practically impossible to pick out a motionless lizard. They are nearly two feet long before the normal gray and white coloration of the adults is attained. Specimens in the process of molting had patches of ragged skin hanging from their bodies, and the new epidermis was much lighter in color.

Numerous adult spiny-tailed iguanas were seen where rock ledges, stone fences, or trees offered protection. One specimen was seen about eight feet above the ground, in the thorny branches of an acacia. No juvenile individuals (less than eighteen inches in length) were seen in this type of habitat.

Specimens on stone fences disappeared quickly when approached, but when located in trees they showed great reluctance to move. If further disturbed, individuals in trees either dropped to the ground and scurried off or slid into a nearby hollow branch or tree trunk. When on branches overhanging water, the lizards dived into the water when disturbed. They were commonly observed during the hottest part of the day, from ten until four.

Although iguanas are favored articles of food in many parts of Mexico, the Mexicans at Apatzingan will touch neither *Ctenosaura* nor *Iguana* except in time of famine.

***Uta gadovi* Schmidt**

Uta gadovi Schmidt, Amer. Mus. Nov., 22, pp. 3-4, 1921—Cofradia, Jalisco.

Twelve specimens, six males and six females, of *Uta gadovi* are from Apatzingan, and two from Acahuato. All were taken in 1941.

This small species has a single row of large supraoculars. The four mid-dorsal scale rows are enlarged and keeled. A dorso-lateral

row of tubercles is best developed posteriorly. There are no mid-dorsal granular rows. There are ten or eleven femoral pores on each side. The dorsal coloration of these inconspicuous lizards is brownish-gray, with fine, irregular, black-penciled marks. The abdomen is dark blue in the males and dirty gray in the females. Both sexes have an orange spot in the gular region.

These lizards were seen only on hot days, lying on elevated objects such as fence posts, trunks and branches of acacia, and rocks. They showed little inclination to run, usually dodging around to the other side of their supporting object to hide.

Sceloporus horridus oligoporus Cope

Sceloporus oligoporus Cope, Proc. Acad. Nat. Sci. Phila., 1864, pp. 177-178, 1864—Colima.

Sceloporus horridus oligoporus Taylor, Univ. Kans. Sci. Bull., 24, p. 520, 1938.

One specimen from Hacienda California and five from Apatzingan, taken in 1940; twenty-five specimens collected in the vicinity of Apatzingan, during July and August, 1941.

This lizard was seldom found far from trees. It is adept at climbing, but usually conceals itself at the base of a tree, often in a burrow beneath the tree roots. Specimens were occasionally found on stone fences.

Sceloporus melanorhinus Bocourt

Sceloporus melanorhinus Bocourt, Ann. Sci. Nat., Zool., (6), 3, no. 12, pp. 2-4, 1876—Isthmus of Tehuantepec.

Ten specimens were collected from trees near Apatzingan. These lizards were usually seen hanging upside down from a horizontal limb, some twenty feet from the ground.

Specimens from Apatzingan appear to be less distinctly marked than those described by Smith (1939, p. 84).

Sceloporus microlepidotus microlepidotus Wiegmann

Sceloporus microlepidotus Wiegmann, Herp. Mex., p. 51, 1834—Mexico.

Sceloporus microlepidotus microlepidotus Smith, Field Mus. Nat. Hist., Zool. Ser., 26, p. 183, 1939.

A large series of specimens was collected, 239 in 1940, and eleven in 1941, all from Tancítaro.

This species of lizard was found almost everywhere: on stone walls, if the walls had moss on them; under bark; and sometimes

under stones, on cool days. When the days were warm, it was often seen sunning on stone walls, broad tree bases, fallen logs, isolated rocks, and the walls of village houses. It was taken from altitudes of 4,000 to 11,400 feet. These lizards are very nervous, bouncing up and down at any disturbance, and dashing for shelter upon further alarm.

Sceloporus ferrariperezi ferrariperezi Cope

Sceloporus ferrariperezi Cope, Proc. Amer. Phil. Soc., 22, p. 400, 1885—Guana-juato.

Sceloporus ferrariperezi ferrariperezi Smith, Univ. Kans. Sci. Bull., 24, p. 539, 1938.

A large series of specimens was taken from Tancítaro, 201 in 1940 and three in 1941.

Most of these specimens were found close to Tancítaro or in the village itself. They are most abundant on the numerous stone fences during the hottest part of the day. Bigger lizards show more caution than the smaller, and can be obtained only by careful stalking. They were seen also on the walls of houses, at the bases of large trees, and on fallen trees. One specimen was taken at an altitude of 9,000 feet on Cerro Tancítaro.

The stomach of one specimen contained a small *S. a. aeneus*. Others contained dung beetles and grasshoppers, which seem to form a large part of the diet.

Sceloporus aeneus aeneus Wiegmann

Sceloporus aeneus Wiegmann, Isis, 21, p. 370, 1828—Mexico.

Sceloporus aeneus aeneus Smith, Occ. Papers Univ. Mich. Mus. Zool., 361, p. 6, 1937.

Nine specimens were taken at Tancítaro in 1940, and forty the following summer. This oviparous species was nearly always taken in open fields.

Sceloporus pyrocephalus Cope

Sceloporus pyrocephalus Cope, Proc. Acad. Nat. Sci. Phila., 1864, p. 197, 1864—near Colima.

During the first summer, two specimens were taken near Apatzingan, and three were taken at Hacienda California. The second year yielded thirty-nine specimens from Apatzingan and two from Acahuato. Males and females seem to be equally prevalent.

The best place to look for these lizards is on stone fences. The presence of a female is a sure sign that a male is in the immediate

vicinity. The lizards dash to cover at the slightest disturbance, but curiosity soon brings a cautious head into sight. They are quite indifferent to weather.

Phrynosoma asio Cope

Phrynosoma asio Cope, Proc. Acad. Nat. Sci. Phila., 1864, p. 178, 1864—Colima.

Two specimens collected in Apatzingan. This lizard was seen only during the hottest parts of the day. It is perhaps more abundant than the two specimens collected would indicate.

Gerrhonotus imbricatus Wiegmann

Gerrhonotus imbricatus Wiegmann, Isis, 21, p. 381, 1828—Mexico.

Seven of these lizards were collected around Tancítaro in 1940, and twenty-eight in 1941.

Stomachs yielded snails, rose chafers, carabid beetles, grasshoppers, chrysomelid larvae and adults, other lizards, and small snakes.

The ground color is olive-brown, or brown, usually with greenish-white spots or dots. The under parts are greenish-white. Males often have dorsal black spots, tending to form transverse wavy bands.

These lizards are absolutely fearless in captivity. It proved to be impossible to keep them with other species of reptiles, even small rattlesnakes. One alligator lizard was caught killing a *Crotalus t. triseriatus* by holding the snake's jaws shut with its own.

Gerrhonotus ranges to the top of Mount Tancítaro (altitude 11,400 feet). It is seldom found in clearings, although it can be seen on vegetation-covered stone fences.

Heloderma horridum Wiegmann

Trachyderma horridum Wiegmann, Isis, 22, p. 421, 1829—Mexico.

Heloderma horridum Wiegmann, Isis, 22, p. 624, 1829.

One specimen was brought in by a Mexican during the summer of 1940. It was said to have been taken in the Tierra Templada, near San Juan, Tancítaro, at an altitude of some 5,000 feet, which seems unlikely. The lizard was probably taken near Apatzingan.

Ameiva undulata undulata Wiegmann

Cnemidophorus undulatus Wiegmann, Herp. Mex., p. 27, 1834—Mexico.

Ameiva undulata undulata Stuart, Proc. Biol. Soc. Wash., 55, p. 145, 1942.

The nine specimens taken are all from La Majada in the municipality of Apatzingan.

This lizard was seen only in rather thickly forested regions, where it runs on the ground in the quick nervous manner of *Cnemidophorus*. It does not conceal itself in one place, but escapes into the thick brush.

***Cnemidophorus deppii lineatissimus* Cope**

Cnemidophorus lineatissimus Cope, Proc. Amer. Phil. Soc., 17, p. 94, 1877—Colima.

Cnemidophorus deppii lineatissimus Cope, Trans. Amer. Phil. Soc., 17, p. 31, 1892.

During the summer of 1940, one specimen was taken twelve miles south of Tancítaro, seven from Apatzingan, two from Hacienda California, and three from El Capire. In 1941, sixty-five specimens were collected at Apatzingan and one specimen at Acahuato.

This graceful lizard is ubiquitous on the hot plains surrounding Apatzingan, and is common where the soil permits luxuriant growth of grass. In the latter habitat the lizards can be seen only on the narrow footpaths; they run along in front of the observer, then dive into the grass. On days even slightly cloudy it is practically impossible to find a single specimen.

***Cnemidophorus gularis* Baird and Girard**

Cnemidophorus gularis Baird and Girard, Proc. Acad. Nat. Sci. Phila., 6, p. 128, 1852—Indianola and Rio Grande del Norte, Texas.

Four specimens from Apatzingan were collected in 1940 and 126 in 1941; two were taken at Acahuato and one beside the railroad, twenty kilometers south of Apatzingan, all in 1941.

This lizard is closely associated with *deppii*, and if one species is found, the other is sure to be at hand. They do not come out until mid-morning, when the sun is well up, and few are to be found after five o'clock. They are not to be seen in mid-day, but come out again in the afternoon, the majority of individuals retiring again by five o'clock. The identification of this form as "*gularis*" is provisional, as it is evident that numerous valid geographic races of this species were lumped together by Burt (1931; see Schmidt and Smith, 1944, p. 86).

***Eumeces copei* Taylor**

Eumeces copei Taylor, Proc. Biol. Soc. Wash., 46, p. 133, 1933—Asunción, Mexico.

Three specimens were taken under bits of bark at an altitude of 6,000 feet on Mount Tancítaro.

Eumeces dugesii Thominot

Eumeces dugesii Thominot, Bull. Soc. Phil. Paris, (7), 7, p. 138, 1883—Guana-juato.

Two specimens were collected in 1941, in El Soledad, in the municipality of Tancítaro.

SERPENTES

Constrictor constrictor imperator Daudin

Boa imperator Daudin, Hist. Nat. Rept., 5, p. 150, 1803—Colombian Choco.
Constrictor constrictor imperator Ruthven, Zool. Jahrb., Syst., 32, p. 323, 1912.

Two specimens were taken at La Majada, Apatzingan.

Both are males. Scale rows 57-70-35 and 60-67-37; ventrals 237 and 236; caudals 52 and 58; total lengths 1,165 and 485 mm.; tail lengths 112 and 59 mm.

Loxocemus sumichrasti Bocourt

Loxocemus sumichrasti Bocourt, Journ. Zool., 5, p. 344, 1876—Tehuantepec.

One specimen was taken at Hacienda California, Apatzingan, on August 9, 1940. Another from near Apatzingan was brought in on August 10, 1941. The first specimen of this relatively rare python was taken at dusk, crawling along the ground in semi-desert terrain.

These specimens, a male and a female, have respectively the following scale counts: scale rows 33-33-25, 32-33-27; ventrals 253, 247; caudals 45, 43; supralabials 9, 9; infralabials 10, 11; preoculars 1 in both; postoculars 4-5 and 3; total length 538, 1,097; tail length 59, 100. The nasals are small, weak, and imperfectly separated from the first labial. The prefrontals are in contact with three labials; they are considerably larger than the internasals, and somewhat smaller than the frontals. Parietals small, separated by an occipital shield. Two rows of subcaudals, feebly keeled. The eyes not large but prominent. Immaculate brown above, pale brown ventrally.

Storeria storerioides Cope

Tropidoclonium storerioides Cope, Proc. Acad. Nat. Sci. Phila., 1865, p. 190, 1865—Mexican plateau between the eastern range and the Valley of Mexico.

Storeria storerioides Garman, N. Amer. Rept., p. 29, 1883.

Six of these snakes were taken at Tancítaro in 1940 and five in 1941. They were most often found under rocks, near water.

The color is olive-brown above with about fifty light-edged, black, transverse cross-bars. These alternate with shorter ones on the side, often joining ends to give a chain-like effect. The abdomen is peppered with black dots. The dorsal pattern may be very indistinct.

	No. and sex of specimens	Extremes	Average
Ventrals.....	2 ♂	128-132	130.0
	9 ♀	127-139	132.0
Caudals.....	2 ♂	43-45	44.0
	9 ♀	38-43	40.3

Thamnophis eques eques Reuss

Coluber eques Reuss, Mus. Senckenb., 1, pp. 152-155, 1834—Mexico.

Thamnophis eques eques Smith, Zoologica, 27, p. 106, 1942.

Ten specimens were taken from late July until middle August, 1940, and four more in 1941, all at Tancítaro.

Thamnophis eques postremus Smith

Thamnophis eques postremus Smith, Zoologica, 27, p. 109, 1942—El Sabino, Michoacan.

Two specimens were collected at Apatzingan in 1941.

Thamnophis scalaris scaliger Jan

Tropidonotus scaliger Jan, Elenco Sist. Ofidi, p. 70, 1863.

Thamnophis scalaris scaliger Smith, Zoologica, 27, p. 103, 1942.

One specimen was collected at an altitude of 7,800 feet on Mount Tancítaro in 1941.

Masticophis flagellum lineatus Bocourt

Bascanion lineatus Bocourt, Miss. Sci. Mex., Rept., livr. 12, p. 700, pl. 48, fig. 1, 1890—Mexico.

Masticophis flagellum lineatus Smith and Taylor, Bull. U. S. Nat. Mus., 187, p. 95, 1945.

Four of these racers were taken near Apatzingan, in 1941. One specimen comes from Uruapan, collected in 1940.

The largest specimen was coiled on a gully-side by a road at an altitude of 5,000 feet. One was shot as it seized a lizard, *Sceloporus horridus oligoporus*.

The single male specimen has ventrals 190 and caudals 115; the four females have ventrals 189-194 and caudals 105-114.

Drymobius margaritiferus fistulosus Smith

Drymobius margaritiferus fistulosus Smith, Proc. U. S. Nat. Mus., 92, p. 383, 1942—Miramar, Nayarit.

One specimen was obtained at Hacienda California, and one from near the town of Apatzingan. This snake is found in the tropical, tangled growth along streams. It is extremely hard to catch, because of its amazing bursts of speed.

The two snakes, both females, have scale rows 17-17-15; ventrals 148 and 143; caudals 129 in the second specimen.

Salvadora bairdii Jan

Salvadora bairdii Jan, Icon. Gén. Ophid., 1, livr. 2, pl. 3, fig. 2, 1860—Mexico.

Forty specimens taken in 1940 and sixteen in 1941 are from the immediate vicinity of Tancítaro. The young were most often found under flat stones near the edges of forested areas, but were also taken in rough clearings. The adults were usually seen on the stone fences located in and near the village, where they were difficult to capture.

With only one exception the fourth and fifth supralabials enter the eye; supralabials uniformly 8; infralabials 9; oculars 2-2; temporals usually 2-2 or 2-3; sub-preocular quite small, wedged between the third and fourth supralabials; normal scale count 17-15-13, occasionally 17-15-13-11.

	No. and sex of specimens	Extremes	Average
Ventrals.....	{ 28 ♂ 18 ♀	184-202 189-213	195 200
Caudals.....	{ 19 ♂ 13 ♀	83-99 86-97	93 91

Salvadora mexicana Duméril and Bibron

Zamenis mexicanus Duméril and Bibron, Erpét. Gén., 7, p. 695, 1854—Cape Corrientes, Jalisco.

Salvadora mexicana Günther, Ann. Mag. Nat. Hist., (3), 12, p. 349, 1863.

A specimen was found dead on road near Apatzingan in 1940. Six were taken at the same locality in 1941.

Scale rows, in all, 17-15-13. All have 9 supralabials. Ventrals, three males 190-191, four females 188-194; caudals, males 124-135, females 126-131. The largest specimen, a female, measures 1,276, tail 395. Number 39023 contained eggs.

Drymarchon corais rubidus Smith

Drymarchon corais rubidus Smith, Jour. Wash. Acad. Sci., 31, pp. 474-476, 1941—Rosario, Sinaloa.

One specimen was found on August 2, 1940, and four were taken in 1941, all from near Apatzingan. They were found on grassy plains, not far from trees and water. They remain hidden during the heat of the day.

These snakes are uniform black above. The belly is yellow or pinkish anteriorly, gradually darkening posteriorly until it becomes an olive gray or black. Our specimens are in close agreement with Smith's description. The largest specimen measures 2,120, tail incomplete.

Pituophis deppei brevilineata subsp. nov.

Type from Tancítaro, Michoacan, Mexico. Altitude about 6,000 feet. No. 37126 Chicago Natural History Museum. Male. Collected August 15, 1940, by F. Schacht.

Diagnosis.—A *Pituophis* of the *deppei* group with ventrals 233-241, and with short longitudinal nuchal and post-nuchal black lines somewhat resembling those of *Pituophis lineaticollis*.

Distinguished from both *deppei deppei* and *deppei jani* by its higher number of ventrals and by the black lines on the neck; and from *lineaticollis* by the shortness of these lines and lower number of ventrals.

Description of type.—Dorsal scales 27-29-23; ventrals 233, caudals 65; upper labials 9-8, lower labials 13-13; preocular single; postoculars 2-3; temporals 3-4 and 3-3.

Head uniform brown, without markings, lighter beneath. Dark dorsal blotches number 37 on the body and 13 on the tail; the first two, on the neck, each represented by a pair of short black lines, and the succeeding four strongly H-shaped; in the mid-body section each of the blotches encloses a pair of brownish spots; and posteriorly they become short transverse bars, continuing onto the tail. The venter is unmarked anteriorly, becoming more and more distinctly spotted posteriorly, the spots black and mostly confluent on the mid-line beneath the tail.

Measurements of type.—Total length 1,127, tail 152, ratio of tail to total length 0.13.

Notes on paratypes.—Four additional specimens from Tancítaro, Nos. 39069-39072, exhibit only slight variation. The single male

has ventrals 231, caudals 67. The three females have ventrals 235, 240, and 241; caudals 55, 55, and 63. All have the neck strongly lineate.

Remarks.—There is no actual overlap of characters between *deppei deppei* and *d. brevilineata*, but the occurrence of the latter form at the southwestern border of the range of *deppei* makes it likely that *brevilineata* and *deppei* intergrade somewhere to the north of Tancítaro.

Rhadinaea laureata Günther

Dromicus laureatus Günther, Ann. Mag. Nat. Hist., (4), 1, p. 419, pl. 19, fig. E, 1868—Mexico City.

Rhadinaea laureata Boulenger, Cat. Snakes Brit. Mus., 2, p. 179, 1894.

Three specimens taken in 1940 and six in 1941, all from Tancítaro.

Rhadinaea taeniata Peters

Dromicus taeniatus Peters, Monatsber. Akad. Wiss. Berlin, 1863, p. 275, 1863—Mexico.

Rhadinaea taeniata Bailey, Occ. Papers Mus. Zool. Univ. Mich., 412, p. 14, 1940.

Two specimens from Tancítaro, collected in 1940 and 1941. These specimens, both females, agree exactly with Bailey's description in color pattern; it is somewhat unexpected that they greatly extend the range of variation in ventrals. Both are females, with ventrals 194 and 198, caudals 104 and 105; the larger specimen measures 887, tail 244.

Conopsis nasus Günther

Conopsis nasus Günther, Cat. Colub. Snakes Brit. Mus., p. 6, 1858—California (in error).

Twenty-three of these snakes were taken in 1940 and sixteen in 1941, at Tancítaro. These snakes were usually secreted under rocks, bark, or dead logs.

The ground color is brown to rusty red; back uni-colored in some, but the majority have small black spots that show a tendency to form numerous transverse bands; abdomen heavily mottled with black.

The loreal is normally absent, but may appear, in reduced form, on one or both sides. Scales in 17 rows; supralabials 7; infralabials 6 or 7. No specimen has internasals and prefrontals fused.

	No. and sex of specimens	Extremes	Average
Ventrals.....	22 ♂	125-136	130.7
	16 ♀	130-140	135.9
Caudals.....	22 ♂	33-38	35
	16 ♀	25-40	27.25

***Pseudoficimia pulcherrima* Taylor and Smith**

Pseudoficimia pulcherrima Taylor and Smith, Univ. Kans. Sci. Bull., 28, p. 246, figs. 1, 3, 4, pl. 21, fig. 2, 1942—Huajintlan, Guerrero.

A single specimen from Apatzingan is one of the paratypes of this form.

***Hypsiglena torquata torquata* Günther**

Leptodeira torquata Günther, Ann. Mag. Nat. Hist., (3), 5, p. 170, pl. 10, 1860—Laguna Island, Nicaragua.

Hypsiglena torquata torquata Taylor, Univ. Kans. Sci. Bull., 25, p. 371, pl. 57, fig. 3, 1939.

A single specimen was collected in 1941 at Apatzingan.

***Pseudoleptodeira latifasciata* Günther**

Hypsiglena latifasciata Günther, Biol. Centr.-Amer., Rept., p. 138, pl. 49, fig. B, 1894—southern Mexico.

Pseudoleptodeira latifasciata Taylor, Univ. Kans. Sci. Bull., 25, p. 343, pl. 31, fig. 4, 1939.

The single specimen, from Hacienda California, is a female, with ventrals 185, caudals 70, length 327, tail 67, and broad black crossbands, behind the narrower nuchal crossband, 9-3.

***Sonora michoacanensis michoacanensis* Dugès**

Contia michoacanensis Dugès in Cope, Proc. Amer. Phil. Soc., 22, p. 178, 1885—Michoacan.

Sonora michoacanensis michoacanensis Stickel, Proc. Biol. Soc. Wash., 56, pp. 112-116, 1943.

A male specimen was collected at Hacienda California, August 15, 1940; two females were taken at the same place during the same month in 1941.

The two female specimens have ventrals 171 and 172, caudals 36 and 39; the larger specimen measures 240, tail 39. The male specimen has 152 ventrals and 43 caudals.

The coloration of the three specimens varies. The male has a black nuchal crossband, more than eight scales wide, little narrowed below, terminating on the second scale-row. The rest of the body

and tail is immaculate pink. One of the female specimens has the same markings as the male, but with characteristic black-bordered cream bands at regular intervals of some twenty scales. Medially, the black borders are about three scales wide, but terminate in a point, either at the first scale-row or a scale or two above. The points tend to meet beneath the cream band, and a partial connection actually takes place on the first two of these markings. The other female has eleven more closely spaced markings that give way, posteriorly, to wide black crossbands that tend to meet and crowd out the pink coloration. The last of these bands completely encircles the body. The nuchal collar of this specimen is narrowed ventrally. All three snakes have the heads black above, with gray internasals.

Leptodeira smithi Taylor

Leptodeira smithi Taylor, Univ. Kans. Sci. Bull., 25, p. 334, fig. 5, pl. 31, fig. 2, 1939—Uruapan, Michoacan.

Four specimens were taken in 1940: one from near the town of Apatzingan, one from El Capire, and two from Hacienda California. Seven specimens were taken near the town of Apatzingan in 1941. All were taken at night, mostly on trails in open country; one was found on a trail beside the Rio Tepalcatepec.

	No. and sex of specimens	Extremes	Average
Ventrals	{ 4 ♂ 7 ♀	164-173 160-180	168.7 169.5
Caudals	{ 3 ♂ 7 ♀	74-79 64-76	76.6 69.7

Trimorphodon biscutatus biscutatus Duméril and Bibron

Dipsas biscutata Duméril and Bibron, Erpét. Gén., 7, p. 1153, 1854—Mexico.

Trimorphodon biscutatus biscutatus Smith, Proc. U. S. Nat. Mus., 91, p. 159, 1941.

Five specimens were taken near the town of Apatzingan in 1941.

The ventrals in this small series exhibit no sexual difference; they range from 263 to 271 in three females and from 259 to 275 in the two males; subcaudals 85-87 in females, 95 in both males. The upper labials are uniformly 9, the lower labials 13 or 14; preoculars uniformly 3; postoculars 3, except in No. 39084, in which there are five on the left side. The largest female specimen measures 1,316 mm., tail 211; the larger male 1,357 and 241.

This large snake shows absolutely no inclination to bite, even when deliberately annoyed. It is strictly nocturnal and is easily

taken with the jack light. Specimens were often observed crawling across roads. An extremely large specimen was found searching for frogs in a pond choked with water hyacinth.

Trimorphodon fasciolata Smith

Trimorphodon fasciolata Smith, Proc. U. S. Nat. Mus., 91, pp. 160-162, 1941—Zararacua Falls, Uruapan, Michoacan.

Two specimens were taken at Apatzingan in 1941. This species is also strictly nocturnal and is found in much the same habitat as *biscutatus*. Both specimens are males.

Scale counts and measurements: scale rows 22-23-16, 21-24-17; ventrals 215, 219; caudals 67, 72; supralabials 8 in both; infralabials 11, 12; total length 716, 790; tail length 112, 140; per cent of tail of total 15.6, 17.7; dorsal bands 12 and 13, respectively.

These specimens are somewhat intermediate between *fasciolata* and *latifascia*. The dorsal bands do not narrow, ventrally, as much as in *latifascia*, nor are they as broad as those of Smith's *fasciolata*. More specimens may disprove the validity of *fasciolata*.

Tantilla calamarina Cope

Tantilla calamarina Cope, Proc. Acad. Nat. Sci. Phila., 18, p. 320, 1866—Guadalajara.

The single female specimen, from Apatzingan, collected in 1941, has ventrals 128, caudals 27, length 139, and tail length 19.

Micrurus diastema michoacanensis Dugès

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

Micrurus diastema michoacanensis Smith, Proc. U. S. Nat. Mus., 93, p. 453, 1943.

Two specimens, one from Apatzingan and one from Hacienda California.

One of these snakes was taken at night, in the vicinity of Apatzingan. The other was found beneath a rock late in the afternoon.

The anterior part of the head has the customary black marking, which reaches from the rostral to the anterior third of the parietals. A large black nuchal collar, eight scales wide, is separated from the parietals by a single scale. The yellow body rings cover about two or three scale rows, and the black rings are about four and one-half scales wide. The specimens, male and female, have, respectively,

ventrals 215 and 226; caudals 49 and 39; rings 6 and 8; total length 725 and 795; tail length 73 and 84.

Agkistrodon bilineatus Günther

Ancistrodon bilineatus Günther, Ann. Mag. Nat. Hist., (3), 12, p. 364, 1863—
Pacific coast of Guatemala.

A large male specimen of this species was obtained from a resident, who had killed it in a wet cane field, bordering a stream, a few miles west of Apatzingan.

Scale rows 23-23-19; ventrals 133; caudals 11; supralabials 9; infralabials 10; preoculars 2; postoculars (including suboculars) 5; total length 1,023; tail length 212.

Crotalus basiliscus Cope

Caudisona basilisca Cope, Proc. Acad. Nat. Sci. Phila., 16, p. 166, 1864—
Colima.

Crotalus basiliscus Yarrow, Wheeler's Surv. W. 100th Merid., 5, p. 532, 1875.

One female specimen was captured five miles south of Apatzingan, on August 6, 1941.

Scale rows 32-27-22; ventrals 185; caudals 29; supralabials 16; infralabials 16; oculars 7; length 400; tail length 33.

The Apatzingan record helps to fill the gap between the areas in Colima and Oaxaca in which this species is known to occur.

Crotalus triseriatus triseriatus Wagler

Uropsophus triseriatus Wagler, Natur. Syst., Amph., p. 176, 1830—Mexico.

Crotalus triseriatus triseriatus Klauber, Bull. Antivenin Inst. Amer., 5, p. 33, 1931.

Eleven of these rattlesnakes were collected at Tancítaro in 1940 and thirty-three were taken in 1941. This species is very secretive, retreating rapidly at signs of danger. One specimen, taken by Hoogstraal and Leavenworth, resisted savagely when cornered.

Average scale row count 25-23-17; preoculars 2; postoculars 5; longest specimen 726 mm.; shortest specimen 196 mm. The variation in ventrals and caudals is shown below.

	No. and sex of specimens	Extremes	Average
Ventrals.....	{ 20 ♂ 15 ♀	141-163 139-165	151.1 151.5
Caudals.....	{ 20 ♂ 15 ♀	27-34 24-29	31 25.7

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