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NOTES ON A COLLECTION OF AMPHIBIANS AND
REPTILES FROM THE STATE OF
COLIMA, MEXICO

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THIS report is based on specimens collected by Mr. Anderson Bakewell and the author in the state of Colima, Mexico, during the months of June, July, and August, 1935. At that time collections were made in various regions of the state in an attempt to obtain specimens from the different habitats. The localities where collections were made are shown on Map 1.

These localities are found in two general areas. The first of these is the coastal region, which is characterized by dense vegetation and much humidity. There are numerous swamps and lagoons surrounded by thick hardwood forests, open scattered patches of savanna grassland, and a few arid portions with cacti and other xerophytic plants. In this area are located Paso del Río, Tecomán, Pascuales, Manzanillo, and Santiago. The second general region is that of the plateau section, which is higher and drier than the coastal region. This area is composed of arid hills and elevated plains dissected by deep barrancas and covered with scattered patches of short grass and xerophytic shrubbery. In the more humid portions there are occasional hardwood forests, and the barrancas are often filled with heavy growths of vegetation more characteristic of the coastal region. In this area are situated Queseria, Comala,

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Villa Alvarez, the city of Colima, Albarradita, La Estancia, Salvador, Buena Vista, Los Mezcales, and Las Orrices.

I wish to take this opportunity to express my great appreciation for the assistance given me by Mrs. H. T. Gaige, Dr. Norman Hartweg, Dr. C. F. Walker, and Dr. L. C. Stuart of the Museum of Zoology, University of Michigan, Dr. H. K. Gloyd of the Chicago Academy of Science, Dr. E. H. Taylor and Dr. H. M. Smith of the University of Kansas, Mr. K. P. Schmidt of Field Museum of Natural History, Dr. E. R. Dunn of Haverford College, and Mr. H. W. Parker of the British Museum (Natural History). I also wish to express my deep gratitude to Mr. Anderson Bakewell for his most pleasant companionship and valuable help in the field, to the Museum of Zoology, University of Michigan, for financial aid, and to Miss Grace Eager for the drawings.

LIST OF SPECIES

Bufo marinus (Linnaeus)

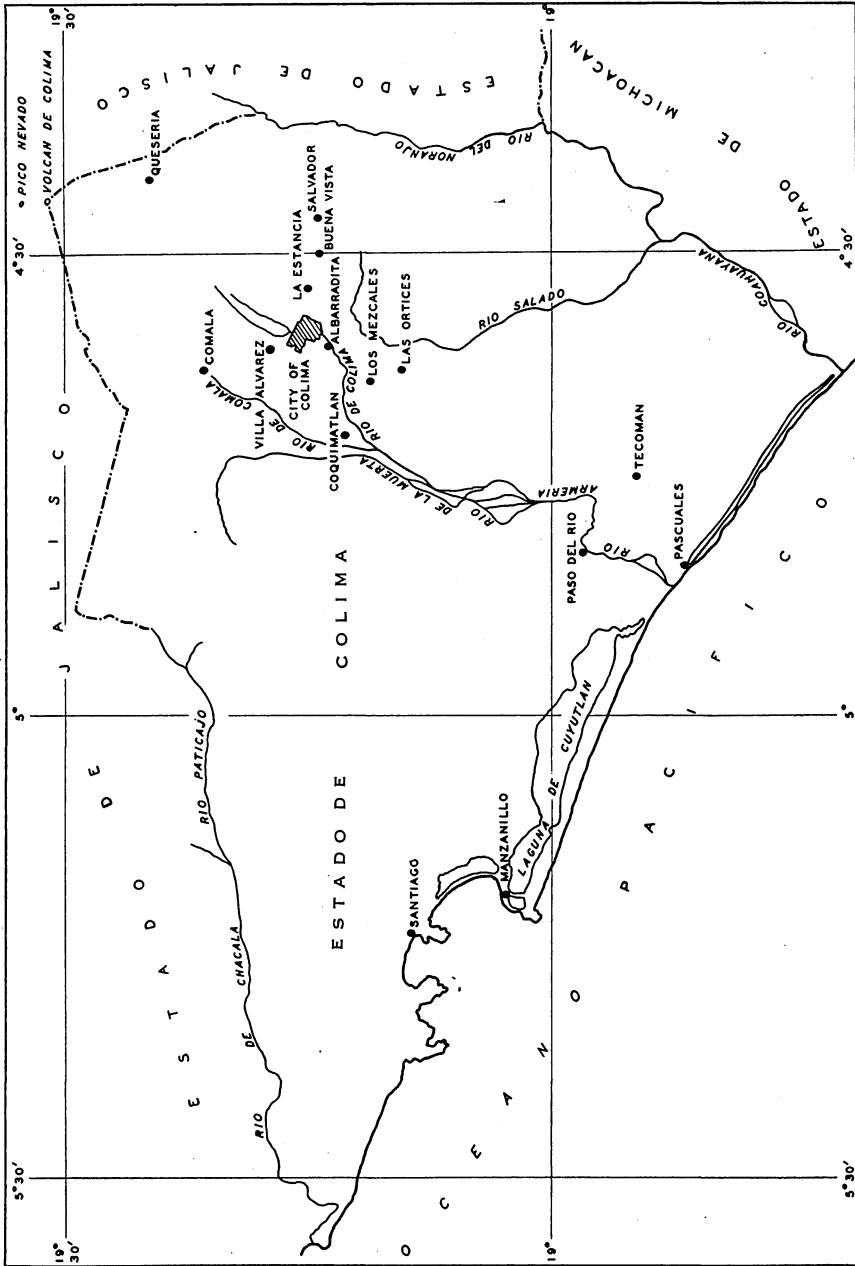
Queseria, 3; Villa Alvarez, 2; Tecomán, 1; Buena Vista, 1; Las Orrices, 1; Paso del Río, 19; city of Colima, 1.

Common throughout the state.

Bufo marmoratus Wiegmann

Manzanillo, 2; Villa Alvarez, 1; Tecomán, 4; city of Colima, 1; Paso del Río, 10; Santiago, 30.

This species was found to be most abundant in the lower portions of the state and in or near wooded areas. In this series of specimens two color and tuberculation phases are found. In one phase the dorsal color varies from light olive green to dark brown, with the vertebral and dorsolateral stripes very faint or entirely absent. In these individuals the dorsal warts are usually larger and more conspicuous than those of the second type. This color and skin texture phase is most common among males but is not found in the males alone. The second phase is most commonly found in females, but is not restricted to them. Here the light vertebral and dorsolateral stripes are very distinct, with a series of dark brown blotches



MAP 1. The State of Colima, Mexico, showing localities where collections were made.

on either side of the vertebral stripe. The dorsal warts in these specimens are usually smaller and less conspicuous than in the first phase. In all localities where this species occurred the two phases were found side by side.

Bufo simus Schmidt

Queseria, 2.

One adult and one juvenile of this species were collected. Both were taken at night in a road beside a cultivated field. The adult has a snout to vent measurement of 69 mm.

Leptodactylus melanonotus (Hallowell)

Queseria, 8; city of Colima, 2; Tecomán, 2; Paso del Río, 55; Santiago, 4.

Common throughout the state. On July 27 a frothy mass of eggs of this species was found at the edge of a pond at Paso del Río.

Eleutherodactylus mexicanus (Brocchi)

Queseria, 1; Paso del Río, 3.

The specimen taken at Queseria was found beneath a stone in an arid locality; the three taken at Paso del Río were found hopping about in a humid woods. The variation exhibited by these individuals warrants a brief description. They are more like the *E. mexicanus* mentioned by Kellogg (1932) from Sinaloa, in possessing shorter hind legs and in coloration, than are specimens from other localities. The extended tibio-tarsal joint reaches the eye, and in none of the four specimens does it reach beyond the anterior margin of the eye. The outer metatarsal tubercles are exceedingly small, being represented in three specimens by a small light-colored spot and in the fourth by a slightly more prominent tubercle. All possess vomerine teeth. One individual has a white pin-stripe along the vertebral line; none of the others exhibit this character. All have a dark interorbital streak which is interrupted in only one specimen. The four specimens have a pair of short glandular ridges on the middorsal surface which vary in length from a mere spot to several millimeters in length. In dorsal

coloration the specimens vary from an individual with numerous brownish black blotches scattered over the back to a light-colored specimen with practically no dark areas other than the middorsal glandular ridges. In the latter specimen the crossbands of the thigh and tibia are scarcely visible. The concealed portions of the thigh and tibia, when the legs are flexed, are colored a rosy pink in three specimens; the fourth lacks this color entirely.

Pternohyla fodiens Boulenger

Queseria, 1; Buena Vista, 1.

Both specimens were collected above three thousand feet in the plateau area.

Agalychnis dacnicolor (Cope)

Queseria, 2; Manzanillo, 1; Tecomán, 5; Villa Alvarez, 1; vicinity of city of Colima, 59; Paso del Río, 29; Santiago, 5.

Common throughout the state. This frog was found breeding from July 10 to August 16. Numerous clusters of the pale green eggs were found always deposited well above the water and attached to leaves of trees and shrubs, logs, walls of fountains, and even floating debris. When in trees and shrubs they were usually between two and six feet above the water surface. One cluster of eggs, which was found August 16 and was undoubtedly obtained the morning after deposition, was placed in a container to allow development. On August 24 the first tadpoles had abandoned the egg mass and were wriggling about on the bottom of the container. By the morning of August 26 they had all completely abandoned the mass. They were immediately preserved. One of them has a total length of 12 mm., tail length, 8 mm. External gills are present; the teeth are not yet developed; the beak is present. The body is rounded, and the tail is long and pointed at the tip. The body is pale green with dark dorsal spots; the tail has scattered dark spots on the muscular portion, and translucent crests.

Hyla baudinii Duméril and Bibron

Queseria, 18; Paso del Río, 21; Santiago, 1; Los Mezcales, 1.

Common throughout the state. Breeding individuals were found from the middle of June to the last of August.

Hyla smithii Boulenger

Queseria, 20; Tecomán, 1; Paso del Río, 28.

These specimens corresponded so well with the description of *H. smithii* [*H. nana* Günther], considered by Dunn and Kellogg synonymous with *H. eximia*, that a series was sent to the British Museum. Mr. H. W. Parker kindly compared them with the types of *smithii* and found the two forms conspecific, noting as the only difference that the fingers and toes of the Colima specimens appeared to be slightly shorter than those of the co-types. Since both in structure and coloration the Colima series differs decidedly from *H. eximia*, it is evident that *smithii* must be regarded as an authentic species.

E. H. Taylor has recently (1937b) redescribed *smithii*, basing his description in part upon our specimens. It should be noted that fourteen of the forty-nine specimens from Colima completely lack vomerine teeth. In the remaining thirty-five the teeth may be fully developed on both sides, partially developed on both sides, or absent on one side and present on the other. In our specimens the diameter of the tympanum is one-third to one-half that of the eye, the toes are about two-thirds webbed, the web not quite reaching the disk of the third and fifth toes, and the tarsal fold may be present or absent.

There is considerable variation in the coloration of these specimens. In some the dorsum is light yellow with practically no dark pigmentation other than that of a faint dorsolateral stripe, extending posteriorly from the eye on the sides of the abdomen. Others have a more prominent dorsolateral stripe, and the dorsum is mottled with black or dark brown. Some individuals have dark blotches which tend to fuse on the head, producing a black mask over the muzzle and eyes. Several of these color variations are shown in Plate I.

During the months of June and July these small frogs were found singing and breeding in the bushes and semiaquatic vegetation around ponds and marshes.

Hyla venulosa (Laurenti)

City of Colima, 1.

The single specimen was found about forty feet above the ground at the base of a palm frond in a coconut tree.

Hypopachus oxyrhinus Boulenger

Queseria, 16.

From June 17 to 20, specimens were found singing and breeding along the edges of ponds and marshes in the higher regions of the state.

Microhyla usta (Cope)

Tecomán, 5; Paso del Río, 1; Santiago, 7.

Usually found in the thick vegetation of the marshy areas in the lower part of the state.

Rana pipiens Schreber

Queseria, 13; Buena Vista, 1; Paso del Río, 7; city of Colima, 2.

Common throughout the state.

Rana pustulosa Boulenger

Queseria, 1.

The single specimen of this rare frog was found under the exposed roots of a tree in a damp, heavily wooded area. It was sent to H. W. Parker for comparison with the type. He wrote:

Your specimen is certainly conspecific with the type of *Rana pustulosa*. It is smaller, but agrees very closely. The differences you mention:

(a) Length of snout. This is the same in both, but the type has the end of the snout slightly pushed in.

(b) Pustulosity. The back of your specimen has similar but smaller and less numerous pustules which are visible only when it is wet, and drying off; they look like small white spicules.

(c) Color of the thighs. This is almost identical in the two; in yours the light markings are somewhat smaller and more numerous, but the amount of difference scarcely seems worth considering.

MEASUREMENTS OF THE SPECIMEN IN MM.

| | | | |
|--------------------------|------|---------------------|-------|
| Snout to vent | 83.0 | Second finger | 11.5 |
| Length of head | 30.0 | Third finger | 14.0 |
| Width of head | 30.5 | Fourth finger | 12.0 |
| Snout | 8.5 | Hind leg | 144.0 |
| Eye | 9.5 | Tibia | 48.0 |
| Interorbital width | 5.0 | Foot | 44.0 |
| Tympanum | 5.0 | Third toe | 23.0 |
| Foreleg | 50.0 | Fourth toe | 32.0 |
| First finger | 16.5 | Fifth toe | 28.0 |

This is the first authentic record of a specimen of the species since that of the type (Durango). The specimen from Sinaloa in the Museum of Comparative Zoology, recorded by Dunn (1922) as *R. pustulosa*, proves on re-examination to be a badly rubbed *montezumae*. It is possible that other specimens are included in museum collections under *R. palmipes*.

Kinosternon integrum LeConte

Queseria, 2; city of Colima, 4; Buena Vista, 1; Coquimatlán, 74; La Estancia, 24.

Common throughout the higher part of the state.

Geoemyda pulcherrima pulcherrima Gray

Villa Alvarez, 1; Coquimatlán, 10.

This is the common terrestrial turtle of the state; found most frequently in humid woods.

Geoemyda rubida Cope

Tecomán, 2; Paso del Río, 1.

These specimens were found in the wooded areas near the coast.

Caretta olivacea (Eschscholtz)

Manzanillo, 1.

The single specimen was taken in the Bay of Manzanillo.

Crocodilus acutus Cuvier

Laguna de Cuyutlán, 5; Paso del Río, 1; La Estancia, 5.

All specimens taken were juveniles and were collected at night by lighting. The stomach contents of the five from the Laguna de Cuyutlán were examined. These individuals were taken while eating or shortly after, for the stomachs were well filled and distended. Four of the stomachs examined contained only the remains of insects, mostly Orthoptera and Coleoptera. The fifth contained fragments of insects and of several small crabs. The Laguna de Cuyutlán is a brackish-water lagoon.

Phyllodactylus lanei Smith

City of Colima, 9; Paso del Río, 1; Santiago, 3.

These specimens were collected at night on the walls of buildings, on rock fences, and on large trees.

Anolis nebuloides Bocourt

Queseria, 12; Villa Alvarez, 2; Salvadora, 3; Paso del Río, 8; Tecomán, 1.

Common throughout the state. This series of specimens shows three variations in dorsal markings. The most common marking is that of a middorsal row of dark brown blotches. Three specimens have a middorsal light line extending from the occipital region to the tail, and two have a lateral light line just above the light area of the abdomen, with a uniformly colored middorsal surface.

Basiliscus vittatus Wiegmann

Tecomán, 8; Paso del Río, 34.

Common in the coastal area of the state.

Ctenosaura acanthura (Shaw)

Villa Alvarez, 3; Las Ortices, 3; Paso del Río, 6.

Common throughout the state on rock walls, around old buildings, and in trees.

Ctenosaura pectinata (Wiegmann)

Villa Alvarez, 5; Las Ortices, 1; Paso del Río, 6; Tecomán, 1.

Common throughout the state.

Iguana iguana rhinolopha Wiegmann

Tecomán, 15.

This lizard was seen in only two localities in the state, Tecomán and Manzanillo. No specimens were collected at the latter locality.

Uta tuberculata Schmidt

City of Colima, 1; Villa Alvarez, 2; Paso del Río, 5.

These specimens correspond more closely with this species than with the closely allied *U. bicarinata*, especially in the characters of the enlarged dorsal and lateral tubercles and the ventral scales. Common throughout the state. It was usually found on trees and cacti.

Phrynosoma asio Cope

City of Colima, 1.

A single specimen of this striking horned-toad was found in an arid wooded region just north of the city of Colima.

Sceloporus horridus oligoporus Cope

Queseria, 2; Villa Alvarez, 16; Salvadora, 3; Paso del Río, 8.

Common throughout the state. These specimens have been referred to this subspecies on the suggestion of H. M. Smith.

Sceloporus melanorhinus Bocourt

Villa Alvarez, 5; Tecomán, 1; Paso del Río, 1.

This lizard, compared with the other species of *Sceloporus* found in the state, is relatively rare. The specimens taken were found either on the trunks of large trees or, more rarely, on the large organ cactus. The striking coloration of the males deserves a brief description: a black band on the snout extending nearly to the eye level, posteriorly passing below the eye and through the ear to the shoulder; a light gray band across the muzzle just anterior to the eyes; a black band passes across between the eyes and is followed posteriorly by a small white area which in turn is followed by a dark shield-shaped mark-

ing; a white stripe arising just anterior to the eye extends posteriorly through it and on the shoulder; the remainder of the dorsal surface is light grayish brown; the anterior portion of the chin is black with a white cross-shaped spot, followed by a dark blue area, which in some specimens is bordered posteriorly by a transverse gular extension of the lateral black portion anterior to the shoulder; the chest is orange, this color extending on the abdomen, where it forms a narrow median line with a dark blue border; the lateral portion of the abdomen on either side of this line is yellowish green in coloration; the under part of the tail is grayish white.

Sceloporus pyrrhocephalus Cope

Villa Alvarez, 65; Salvadora, 2; Las Ortices, 3; Paso del Río, 3.

This lizard was found to be common from sea level to an elevation of 3500 feet. No specimens were collected above this level. The difference in color of the two sexes warrants a brief description. Male: head brown with alternating blue and yellow bars on the upper lip; dorsal surface of the body brownish blue, giving the animal a metallic blue appearance; a lateral darker blue stripe extending from the ear posteriorly to the insertion of the hindleg; tail light metallic blue with darker blue crossbands; under side of the chin light orange with diagonal bars of light metallic blue; chest white with blue blotches; abdomen light blue, edged with light brown and with a double row of median darker blue blotches separated by a white line; under surface of tail and legs bluish white. Female: head light reddish brown with yellow and black bars on the upper lip; dorsal surface of the body dark brown with the lateral stripe barely visible or absent entirely; tail dark brown; chin yellow with oblique blue bars on each side; abdomen and chest white, the abdomen with lateral dark blue blotches; under part of tail and legs brownish white.

Several pairs of these lizards were seen mating on July 3. The following field notes record the courtship activities observed on this date: examples of this species were rather abundant on the rock fences from three to five miles northwest of

Villa Alvarez; throughout the day the courting and mating behavior was observed. In one instance the female was stationed on one stone of the fence and the male on another several feet away. The male stood rather high on all four feet and went through "bobbing" motions much like those of *Holbrookia*. He then went to the rock on which the female was standing. With the approach of the male the female began to wave her tail back and forth. As he drew near the female repulsed him by biting him. The male retreated a few stones away and repeated the "bobbing." A moment later a second male appeared and started toward the female. The first male, however, ran toward him, and the two males scurried away out of sight. Later in the afternoon we found a pair of these lizards copulating on a tree. The male was on the back of the female and was holding her by the nape of the neck with his teeth while the pelvic region of his body was bent down around her left side.

Sceloporus utiformis Cope

Queseria, 9; Villa Alvarez, 3; Tecomán, 6; Paso del Río, 11.

Common throughout the state.

Eumeces parvulus Taylor

Paso del Río, 1.

Found beneath a rotten log in a humid woods. E. H. Taylor kindly examined the specimen, and he has pointed out some minor differences from the type: slightly larger posterior loreal and the anterior somewhat smaller; the two median rows of dorsal scales slightly larger than the other rows.

Leiolopisma assatum taylori,¹ n. subsp.

TYPE.—No. 80107 MZUM.²; female; Santiago, Colima, Mexico; August 6, 1935.

¹ Named for Dr. E. H. Taylor, University of Kansas.

² Abbreviations used in this paper are: MZUM., Museum of Zoology, University of Michigan; EHT., private collection of Dr. E. H. Taylor; USNM., United States National Museum.

PARATYPES.—No. 80106 MZUM.; female; Paso del Río, Colima, Mexico; July 27, 1935: Nos. 10057–58 EHT.; kilometer three hundred and fifty, between Rincón and Cajones, Guerrero; July 24–25, 1936; E. H. Taylor, collector: No. 10048 EHT.; near Mazatlán, twelve miles south of Chilpancingo, Guerrero; June 26, 1932; Smith–Taylor, collectors.

DIAGNOSIS.—A *Leiolopisma* of the “Mocoa” group with an undivided frontoparietal and a tendency for one complete pair of nuchals. Scales in twenty-six to twenty-eight rows around the middle of the body; dorsal scales smaller than ventrals; limbs extremely short in proportion to axilla to groin length, when adressed they fail to touch and are separated by from twelve to twenty-one scale rows; the dark brown dorsolateral line is broken at about the point of insertion of the foreleg.

DESCRIPTION OF THE TYPE.—Body elongate, less robust than in *assatum*; snout short, obtuse. Rostral broader than high, its suture with the frontonasal anterior to a line between the anterior edge of the nostrils; portion of rostral visible from above equal to one-half the length of the frontonasal, which is broader than long; frontal about as long as the frontoparietal, which is single; frontal and frontonasal narrowly in contact, separating prefrontals; prefrontal in contact with both loreals and first superciliary; interparietal in contact with three supraoculars, slightly broader than long and enclosed by the parietals; one complete pair of nuchals bordering the parietals and in contact with the secondary temporal scale on either side. Nostril pierced in the center of the nasal; two loreals, the anterior higher and narrower, the posterior higher than long; two preoculars bordered posteriorly by three small scales; two presuboculars and two postsuboculars; a series of four small scales bordering posterior edge of the eye; four supraoculars separated from eye by a series of eight to nine superciliaries. Seven upper labials on the left side, eight on the right; temporal formula one to two, upper secondary the largest; lower secondary temporal separated from the anterior edge of the ear by three scales; ear opening oval with no auricular lobules. Lower labials, seven, the fifth the longest;

one large postmental followed by three large, paired chin shields, only the first pair in contact; eyelid with a small transparent disk surrounded by minute scales. Limbs short, longest finger extending two scales beyond ear opening; when adpressed the legs fail to meet by eighteen scales; lamellar formula for fingers 4:6:9:10:6; lamellae under fourth toe, fourteen; tubercles under sole numerous, largest bordering heel. Preanal scales enlarged; scales about the middle of the body, twenty-eight, smooth; median row of scales under tail not enlarged or differentiated from those adjoining.

Dorsal coloration of the body medium olive brown, with slightly darker stippling on the scales; a poorly defined dark line passing posteriorly from the nostril through the eye and in contact with the upper edge of the ear opening, breaking up at the point of insertion of the foreleg; upper surface of the legs olive brown with heavy darker pigmentation; dorsal portion of the tail lighter than the body. Rostral white; upper labials white with occasional brown spots; chin white with several brown spots on the lower labials; throat and abdomen white; underside of legs and tail white.

MEASUREMENTS OF THE TYPE AND PARATYPES IN MILLIMETERS

| | TYPE ♀ 80107 MZUM. | ♀ 80106 MZUM. | ♀ 10048 EHT. | ♀ 10057 EHT. | ♂ 10058 EHT. |
|--|--------------------------|---------------------|--------------------|--------------------|--------------------|
| Snout to vent | 45.0 | 25.0 | 49.0 | 49.0 | 46.0 |
| Snout to eye | 3.0 | 2.0 | 3.5 | 3.0 | 3.0 |
| Snout to ear | 7.0 | 5.0 | 8.0 | 8.0 | 8.0 |
| Snout to arm insertion | 14.5 | 9.5 | 15.0 | 15.0 | 15.5 |
| Axilla to groin | 28.0 | 13.0 | 29.0 | 30.0 | 27.0 |
| Head width | 5.0 | 3.0 | 5.0 | 6.0 | 6.0 |
| Head length (snout to posterior edge of pa- rietals) | 7.0 | 5.0 | 7.0 | 7.0 | 7.5 |
| Foreleg | 8.0 | 5.5 | 9.0 | 8.5 | 9.0 |
| Leg | 11.0 | 8.0 | 12.0 | 12.5 | 13.0 |
| Longest toe | 4.0 | 2.0 | 4.0 | 4.0 | 4.0 |

VARIATION.—In the series of fifteen *taylori* examined there is a variation in the number of scales around the middle of the body from twenty-six to twenty-eight; three with twenty-six, one with twenty-eight. The adpressed legs are separated in adults by from twelve to twenty-one scales; the higher numbers occurring in females with eggs. In immature individuals the legs may touch when adpressed, however, as pointed out by Taylor (1937a), this is a normal condition. There is a tendency for a complete pair of nuchal scales, as in the type; four have the formula 1-1, while seven show only one complete nuchal, and the remainder have these scales broken up. In coloration a single young specimen from Guerrero has a complete dark lateral line.

REMARKS.—This subspecies is closely related to *assatum* from which it differs in the shortness of the legs in proportion to the axilla to groin measurement, coloration, and the tendency for a complete pair of nuchals. In *taylori* the limbs when adpressed are separated in the adults by twelve to twenty-one scales; in adult *assatum* the limbs may touch, or they are usually separated by no more than six scales, although in a series of five specimens from southern Chiapas this number may be as high as twelve. In *assatum* the dark lateral line is complete or broken in the middle of the body; in *taylori* it is broken up at the shoulder. In addition, *assatum* has a more heavily pigmented dorsal surface and dark brown spots on the side and frequently on the chin. This form differs from the *Leiolopisma* of the "Oligosoma" group in having an undivided frontoparietal.

The type and paratype, No. 80106 MZUM., were found in rotten logs in the coastal region.

Mabuya mabouya mabouya (Lacépède)

Villa Alvarez, 11; Paso del Río, 1.

The most abundant skink in the state. Six of the specimens collected are females containing well-developed young. These were collected from July 5 to 17. They were usually found on rock walls.

Ameiva undulata undulata (Wiegmann)

Queseria, 1; Tecomán, 19; Salvadora, 1; Paso del Río, 17.

Common in the lower region of the state.

Cnemidophorus deppii lineatissimus (Cope)

Queseria, 2; Villa Alvarez, 10; Paso del Río, 12; Tecomán, 15; Las Ortices, 3.

Common throughout the state. The status of this form has already been pointed out by Hartweg and Oliver (1937).

Cnemidophorus sexlineatus gularis (Baird and Girard)

Queseria, 8; Tecomán, 4; Villa Alvarez, 4; Paso del Río, 13; Salvadora, 4; Pascuales, 1.

Common throughout the state.

Heloderma horridum (Wiegmann)

Paso del Río, 1.

Found in a wooded area.

Leptotyphlops bakewelli,³ n. sp.

TYPE SPECIMEN.—No. 80228 MZUM.; Paso del Río, Colima, Mexico; July 26, 1935.

PARATYPES.—No. 80229 MZUM.; topotype; July 26, 1935; No. 3370 EHT.; topotype; July 1935, H. M. Smith, collector; No. 46340 USNM.; La Salada, Michoacán, Mexico.

DIAGNOSIS.—A *Leptotyphlops* most closely related to *albifrons*, but differing from it in having the rostral elongated and in contact with the supraoculars. This character is shown in Figure 1.

DESCRIPTION OF TYPE.—Snout rounded; supraoculars present, large, separated from the first upper labial; rostral elongated, extending posteriorly beyond the level of the eye and in contact with the supraoculars; nasal completely divided; ocular bordering the lip between the two upper labials; six lower labials. Fourteen scales around the body; 255 scales from the rostral to the spine.

³ Named for my field companion, Anderson Bakewell.

Brown above, lighter beneath; seven distinct dark brown longitudinal dorsal stripes, the two outer stripes on each side broader and closer together than the three inner ones. Anterior two-thirds of the rostral white; posterior third of tail white on ventral surface.

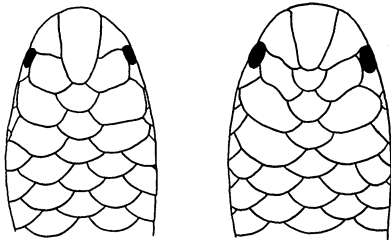


FIG. 1. Head scutellation, (a) in *Leptotyphlops bakewelli*, and in (b) *Leptotyphlops albifrons*.

REMARKS.—A specimen in a series of nineteen specimens of *Leptotyphlops* collected in Tehuantepec by Hartweg and Oliver is typical of this species. The remaining eighteen are typical *albifrons*.

This species shows a tendency to become lighter on the anterior third of the ventral surface than does *albifrons* and also tends to have a higher number of scales from the rostral to the spine. In the Colima series the anterior third of the ventral surface is practically white, with only a very small amount of brown stippling on the ventral scales. The Michoacán and Tehuantepec representatives of this form have a slightly greater amount of brown stippling on these scales than have the Colima specimens. In a series of twenty-nine specimens of *albifrons* from Tehuantepec and northern Chiapas, seven show a light anterior ventral surface, as in the specimens above, while twenty-two have sufficient brown stippling to give this region a uniform light brown color. One or two specimens in the latter series have the ventral surface equally as dark as the dorsal. In the number of scales from the rostral to the spine five specimens of *bakewelli* range from 254 to 255; the series of Mexican *albifrons* examined ranges from 232 to 256,

average, 247.1. Of this series of twenty-nine specimens of *albifrons*, only four have a dorsal count of 254 or above.

This species differs from other Mexican species as follows: from *albifrons* by the elongated rostral which in *bakewelli* is in contact with the supraoculars; in *albifrons* the rostral reaches to the level of the eye but is not in contact with the supraoculars, nor does it extend posterior to the level of the eye. From the *humilis* group the species differs by the presence of the supraoculars and in the coloration; from *dulcis* and *maximus* by the larger supraocular scales and coloration; from *myopica* in having only one labial scale anterior to the eye and in coloration.

Nos. 80228 and 80229 MZUM. were collected in a road running through a humid woody area at Paso del Río. No. 3370 EHT. was taken in a semiarid woods at the same locality.

Future collections from the west coast of southern Mexico may prove this form to be a subspecies of *albifrons*.

Loxocemus bicolor Cope

Between Coquimatlán and Villa Alvarez, 1.

This specimen, a female, was found in a small hole at the edge of a wooded area. Description: upper labials nine on left side, ten on right; muzzle prominent, with the tip of the snout upturned; nasal entire; two transverse internasals; prefrontals fused with the loreal and touching the upper labials; one preocular, in contact with the frontal; one small supraocular; three postoculars; frontal large, polygonal, about as long as its distance from tip of snout; interparietal small, in contact with the frontal and bordered anterolaterally by the parietals. Lower labials, nine on the right side, eleven on the left; one pair of narrow elongated chin shields. Dorsal scales, 31-33-27; ventrals, 246; subcaudals, 43; anal divided. Dorsal color rich dark brown, with scattered white spots, extending to about the fourth row of scales on either side; ventral surface of the body with scales closely stippled with brown at the base, margins cream-colored; underside of the tail dark brown.

Constrictor constrictor imperator (Daudin)

Villa Alvarez, 1; Paso del Río, 2; city of Colima, 1.

Dorsals, 59-75-39, 59-75-47, 57-73-49, 57-75-51; ventrals, 249, 239, 242, 234; subcaudals, 68, 53, 57, 58, respectively.

Masticophis lineatus (Duméril and Bocourt)

Tecomán, 2; Paso del Río, 2; Villa Alvarez, 2.

This snake and the following one are common in the arid and semiarid regions of the state. Dorsals, 17-17-13; ventrals, 183, 190, 185, 188, 191, 195; subcaudals, 53+, 119, 123, 81+, 119, 40+, respectively.

Salvadora mexicana (Duméril and Bibron)

Villa Alvarez, 2; Paso del Río, 1.

Dorsals, 17-17-13; ventrals, 186, 190, 194; subcaudals, 129, 134, 131, respectively.

Drymobius margaritiferus (Schlegel)

Tecomán, 1; Paso del Río, 2; Coquimatlán, 1.

Common in the humid regions. Dorsals, 17-17-15; ventrals, 147, 143, 148, 146; subcaudals, 125, 83+, 148, 123, respectively.

Eudryas boddaertii sleveni Stuart

Paso del Río, 1.

The single specimen was taken in a cacao grove. This is the first record of the species on the mainland of Mexico. Dorsals, 17-17-15; ventrals, 184; subcaudals, 115.

Drymarchon corais melanurus (Duméril and Bibron)

City of Colima, 1; Villa Alvarez, 2; Coquimatlán, 2.

Common throughout the wooded areas of the state. Dorsals, 19-17-15 (2), 17-17-15 (3); ventrals, 195, 200, 201, 198, 204; subcaudals, 64+, 31+, 71, 71, 65, respectively.

Elaphe chlorosma (Günther)

City of Colima, 1.

This specimen, a male, has eight upper labials; head scutellation normal, with temporal formula 3-4. Dorsals, 29-31-27-21; ventrals, 256; subcaudals, 123. It was found in a park in the city of Colima.

Rhadinaea vittata (Jan)

Queseria, 2.

These two specimens were collected in the patio of the Hacienda Queseria, situated at 4500 feet elevation. Dorsals, 17; ventrals, 154, 160; subcaudals, 117, 116, respectively.

Lampropeltis triangulum nelsoni Blanchard

Buena Vista, 1; city of Colima, 1.

Collected in a semiarid region. Both have the labial formula of seven upper and nine lower labials. One has twenty-four pairs of black annuli, the other twenty-five pairs. Dorsals, 21-21-19, 21-21-17; ventrals, 216, 220; subcaudals, 48 and 51, respectively.

Trimorphodon biscutatus (Duméril and Bibron)

Villa Alvarez, 1; Las Orties, 1.

The specimen taken at Las Orties was found in a large cave approximately three hundred yards from the entrance. Dorsal, 25-27-19-17; ventrals, 279, 265; subcaudals, 83, 93, respectively.

Tropidodipsas occidentala, n. sp.

TYPE SPECIMEN.—Male No. 80222 MZUM.; Comala, Colima, Mexico; September, 1931; Adolpho Köhlhorn.

DIAGNOSIS.—Dorsal scales in fifteen rows, smooth; two preoculars; loreal not in contact with the eye; eighty-one subcaudals.

DESCRIPTION OF THE TYPE.—Maxillary teeth nearly equal, slightly longer in the middle. Head distinct; eye rather large; rostral broader than high, a slight portion visible from above; internasals two-fifths the length of prefrontals; frontal longer than broad, equal to its distance from the end of the snout, four-

fifths as long as the parietals; supraoculars large, broader posteriorly than anteriorly; nasal completely divided; loreal longer than deep, not in contact with the eye; two preoculars and two postoculars; temporals, one, two; upper labials, seven, fourth and fifth entering the eye; lower labials, nine; six in contact with the anterior chin shields.

Dorsal scales in fifteen rows, smooth. Ventrals, 175; anal entire; subcaudals, 81. Total length, 315 mm.; tail length, 80 mm.

Dorsal color black; head black with a white neck band two scales wide immediately behind the parietal suture, wider on the sides; upper lip white posterior to eye level, anteriorly mottled black and white; body with white annuli, five of which are complete, the remainder are interrupted on the median dorsal line, and the halves are placed alternately forming six white bands on the right and seven on the left; two of the complete rings are just posterior to the neck band, one in the middle of the body, and two just anterior to the base of the tail. These annuli are one and one-half to three scales wide in the middorsal area, wider on the sides; the anterior rings are wider than the posterior rings. There are five complete rings on the tail, four interrupted bands on the right and five on the left.

Ventral color black with white of dorsal rings extending on the ventral scutes; chin white. The first two annuli posterior to the chin complete across the ventral surface. There are three other complete rings extending across the ventral scutes; two of these are just anterior to the base of the tail, the other is in the middle of the body. The remaining annuli are interrupted on the mid-ventral line and alternate with one another. Underside of tail black with white annuli nearly all continuous across the scutes or partially interrupted, giving a mottled appearance.

REMARKS.—This snake is most closely related to *T. philippii*, but differs from it in having no trace of keels on any of the dorsal scales, in the coloration of the ventral surface, which is not spotted as in *philippii*, and in possessing a greater

number of subcaudal scales (81 in *occidentala*, 67-71 in *philippii*). *T. occidentala* differs from the other Mexican species of this genus, *fasciata* and *sartorii*, in having fifteen dorsal scale rows which are entirely smooth.

I hesitate to name a new snake on the basis of one specimen; however, this and the following form appear to be sufficiently distinct from the species in their respective genera to warrant recognition.

Sibynomorphus gaigeae,⁴ n. sp.

TYPE.—Male, No. 80221 MZUM.; Paso del Río, Colima, Mexico; July 26, 1935.

DIAGNOSIS.—Seven upper labials, seven lower labials; thirteen dorsal scale rows, smooth, middorsal row slightly enlarged; seventy subcaudals.

DESCRIPTION OF TYPE.—Maxillary teeth, ten, longer in the middle. Head large; eye rather large; rostral broader than high, a slight portion visible from above; nasal divided; loreal longer than high, in contact with the eye; no preocular on the left side, a small preocular on the right side between the prefrontal and the supraocular; two postoculars; internasals small, broader than long; prefrontals broader than long, one and one-half times as long as the internasals; frontal polygonal, as long as its distance from tip of snout; supraoculars large, broader posteriorly than anteriorly; parietals large, broader anteriorly than posteriorly; temporals two to three; seven upper labials; seven lower labials.

Dorsals, 13, smooth, the median row slightly enlarged; ventrals, 168; anal entire; subcaudals, 70. Total length, 287 mm.; tail length, 69 mm.

Dorsal color: snout and upper lip white; a dark interorbital band enveloping the eyes and extending on the upper edge of the third and fourth upper labials. Between the eyes this band includes all of the supraoculars and the frontal, the posterior third of the prefrontals, and the anterior third of the

⁴ Named for Helen T. Gaige, Museum of Zoology, University of Michigan.

parietals; a white neck band extends on the upper lip and around on the ventral surface, producing a white chin. Body color black with ten complete white rings. Tail black with five white annuli. The body rings are four to five and one-half scales in width on the median dorsal line, slightly wider on the ventral scutes. The centralmost scales of the white annuli show a black posterior spot on the upper dorsal scales. In life the anterior portion of these scales has a light reddish color which on the lower dorsal scales gives way to the white on the second or third row on either side.

REMARKS.—This snake is most closely related to *S. brevifacies* of Yucatán, but differs from it in having only thirteen rows of dorsal scales, fewer subcaudals (70 in *gaigeae*; 86–89 in *brevifacies*), in the number of labials (7 in *gaigeae*; 9–10 in *brevifacies*), and in the number of postoculars (2 in *gaigeae*; 3–4 in *brevifacies*). It differs from all other Mexican species of the genus in having thirteen dorsal scale rows.

Imantodes gemmistratus Cope

Hacienda Albarradita, 1.

A single female specimen was found in a wagon road in the middle of a coconut grove. It has eight upper labials, nine lower labials, two preoculars, and two postoculars. The temporal formula is one, two, three. Dorsals, 17; ventrals, 231; subcaudals, 133. There are sixty-seven dark brown spots on the body. Only the spots of the anterior two-fifths of the body extend to the ventral scutes. The remainder are broken, forming a series of large median spots and a series of smaller lateral spots on each side, involving the first and second row of dorsal scales and the lateral edge of the ventral scutes. There is no prominent vitta connecting the dorsal spots.

A male specimen from Tehuantepec, Oaxaca, agrees closely with this specimen, but the two differ markedly from Yucatán *gemmistratus* in coloration and scutellation, and probably deserve recognition as distinct forms. From Cope's data (1860, 1861), it is evident that the Yucatán form represents his species. However, his description of *gemmistratus* is too incom-

plete to determine this accurately, and additional material must be examined to decide the true status of these forms.

Leptodeira annulata polysticta Günther

Paso del Río, 1.

Found in a low bush overhanging a stream. Dorsals, 19-21-15; ventrals, 211; subcaudals, 99. This specimen has been referred to this species by E. R. Dunn, who kindly examined it. The dorsal markings are somewhat different than in typical *polysticta*.

Leptodeira septentrionalis maculata (Hallowell)

Tecomán, 1; Las Ortices, 1; Paso del Río, 4.

Common throughout the state in aquatic or semiaquatic habitats. Two were collected while feeding on *Hyla baudinii*. One specimen was on the ground, the other was lying in a small bush swallowing a tree frog. Dorsals, 21-23-17; ventrals, 172, 173, 175, 171, 172; subcaudals, 79, 68, 44+, 78, 51+, respectively.

Manolepis nasuta Cope

Paso del Río, 1.

A single male was found dead in a road in a semiarid region. Upper labials, eight, lower labials, ten; a single preocular; postoculars, two; nasal entire; temporal formula, one, two, three; loreal fused with prefrontal. Dorsals, 19-19-15; ventrals, 173; anal divided; subcaudals, 80.

Oxybelis acuminatus (Wied)

Tecomán, 1.

Dorsals, 17-17-15; ventrals, 185; subcaudals, 180. Apparently rare in the state.

Tantilla calamarina (Cope)

Queseria, 3.

The three specimens were found beneath rocks. Dorsals, 15; ventrals, 129, 132; subcaudals, 27+, 31, respectively. One indi-

vidual is injured so that ventral and caudal counts cannot be made.

Micrurus diastema diastema (Duméril and Bibron)

Paso del Río, 2.

Two females were collected in a wooded area. One has fourteen black rings on the body; the other has thirteen. As pointed out by Schmidt (1936), these individuals show no tendency to reduction in the black rings. Dorsals, 15; ventrals, 217, 215; subcaudals, 43 and 41, respectively.

Agkistrodon bilineatus Günther

Tecomán, 3; Coquimatlán, 1.

The Tecomán specimens were collected in a humid woods; the one from Coquimatlán was found in a semiarid region. Dorsals, 23-23-21; ventrals, 139, 138, 136, 135; subcaudals, 64, 59, 66, 61, respectively.

Crotalus basiliscus (Cope)

Paso del Río, 3; Villa Alvarez, 2.

Two were in wooded areas; the others in a semiarid region. Dorsals, 27-29-27-21 (3), 27-27-21 (2); ventrals, 191, 190, 192, 191, 192; subcaudals, 33, 29, 31, 29, 31, respectively.

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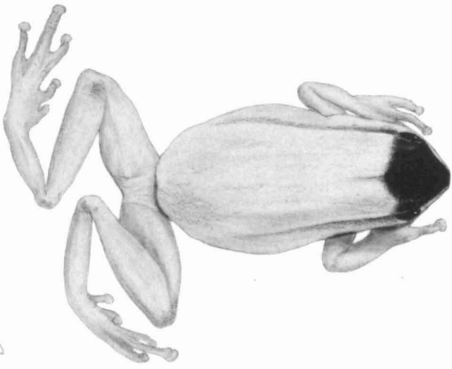
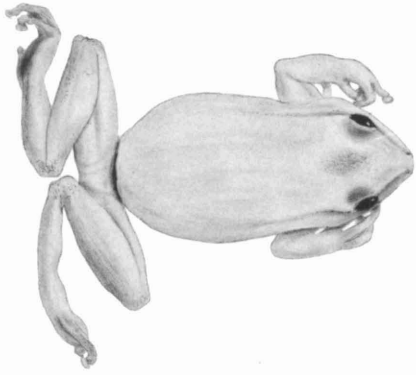
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PLATE I

Three color phases of *Hyla smithi*

The constriction in the sacral region of the two light-colored specimens was artificially produced by attaching the field numbers.



Rana sapa

