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NOTES ON REPTILES AND AMPHIBIANS FROM YUCATAN AND CAMPECHE, MEXICO

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THE following notes are based for the most part upon a collection secured by me during the summer of 1936. The section dealing with Yucatán material is based entirely upon this collection; that dealing with the Campeche fauna includes specimens in the University of Michigan Museum of Zoology and in the United States National Museum.

I am indebted to Dr. E. H. Taylor for assistance in completing the expedition and in the preparation of this report; to Mrs. Helen T. Gaige for permission to study material in the University of Michigan Museum of Zoology; and to Dr. Doris Cochran for permission to study Campeche material in the National Museum. I am further indebted to my companion on the trip, Mr. H. Devlin Thomas, who assisted in collecting herpetological specimens and otherwise contributed to the pleasures of the summer. Mr. John T. Martin has my most sincere thanks for the hospitality he extended us during our prolonged stay at his various ranches in Campeche. Sr. Adolfo Morales of Panlao gave me a number of valuable turtles and crocodiles, and was otherwise of much assistance. Mrs. J. H. Denison, Jr., collected several species of reptiles, most of them otherwise unrepresented in the collections examined, in the

eastern part of Campeche, in a territory very little known. Dr. E. R. Dunn, of Haverford College, and Dr. L. C. Stuart, Dr. Norman Hartweg, Joseph Bailey, and James Oliver, of the University of Michigan, have given many helpful criticisms and suggestions during the preparation of the paper.

I. Yucatán

We arrived at Chixulub, a small village a league east of Progreso, on August 20. Finding no accommodations at this port, we went to Progreso on the same day; we remained until August 23, when we left for Chichen Itzá, arriving there on the following day. Due to restrictions suddenly imposed upon night collecting, we left for Mérida August 27, where we stayed until August 30. In Yucatán 323 specimens, representing 24 species, were collected.

Bufo marinus (Linnaeus)

Two specimens (E.H.T.[1] Nos. 12946–47) from Chichen Itzá Found in a cenote.

Bufo valliceps Wiegmann

Three specimens (E.H.T. Nos. 13502–4) from Chichen Itzá, and forty-one (E.H.T. Nos. 12982–99, 13500–1, 13508–25, 13530–33, 13541, 13552–78, 13622) from Progreso.

Triprion petesatus Cope

Eight specimens (E.H.T. Nos. 12695–12702) from Chichen Itzá. All were found at night in lime trees, singing during and shortly after a brief, heavy shower. They were heard but a single night.

Hyla baudinii Duméril and Bibron

Five specimens (E.H.T. Nos. 12753–57) from Mérida, and fourteen (E.H.T. 12739–52) from Chichen Itzá.

Hypopachus cuneus Cope

A single specimen (E.H.T. No. 12613) from Chichen Itzá, found singing on the same night the *Triprion* were heard.

[1] E.H.T. indicates the collection of E. H. Taylor; U.M.M.Z. that of the University of Michigan Museum of Zoology, and U.S.N.M. that of the United States National Museum.

Thecadactylus rapicaudus Houttuyn

Five specimens (E.H.T. Nos. 11433–37) from Chichen Itzá. Found at night on temple walls.

Hemidactylus turcicus (Linnaeus)

Sixty-seven specimens (E.H.T. Nos. 11329–95) from Progreso. Very common about buildings in the city.

Coleonyx elegans Gray

Two specimens (E.H.T. Nos. 11438–39) from Chichen Itzá. One was found during the day in the dark recesses of a temple, the other under a stone on the ground.

Anolis aureolus Cope

One specimen (E.H.T. No. 0869) from Chichen Itzá, and one (E.H.T. No. 0881) from Mérida.

Anolis sagrei Duméril and Bibron

Two specimens (E.H.T. Nos. 0799, 0693) from Progreso, four (E.H.T. Nos. 0874–77) from Mérida, and three (E.H.T. Nos. 11514–16) from Chichen Itzá.

Anolis tropidonotus Peters

One specimen (E.H.T. No. 11524) from Chichen Itzá.

Basiliscus vittatus Wiegmann

Six specimens (E.H.T. Nos. 14065–70) from Mérida, and three (E.H.T. Nos. 14285–87) from Chichen Itzá.

Ctenosaura similis (Gray)

Six specimens (E.H.T. Nos. 14178, 14211–15) from Progreso, eight (E.H.T. Nos. 14174–75, 14185, 14226–30) from Mérida, and fourteen (E.H.T. Nos. 14172–73, 14183–84, 14216–25) from Chichen Itzá.

Sceloporus cozumelae Jones

Sixteen specimens (E.H.T. Nos. 9956–71) from Progreso.

Sceloporus chrysostictus Cope

Thirteen specimens (E.H.T. Nos. 9982–94) from Progreso, four (E.H.T. Nos. 9995–98) from Chichen Itzá, and two (E.H.T. Nos. 9999–10000) from Mérida.

Sceloporus serrifer serrifer Cope

Fifty-five specimens (E.H.T. Nos. 9882–9936) from Mérida.

Sceloporus lundelli gaigeae Smith

Three specimens (E.H.T. 9942–44) from Mérida.

Cnemidophorus gularis Baird and Girard

Sixteen specimens (E.H.T. Nos. 11816A, 11817A, 11816–17, 11835–41, 11878–79, 11890–92) from Progreso, and seven (E.H.T. Nos. 11818–24) from Chichen Itzá. The specimens are referred to this species despite differences from Texas *gularis*. Specimens from the latter locality differ from those from Yucatán in having much larger postantebrachials, fewer femoral pores, and greater maximum size. The postantebrachials in the Yucatán specimens are relatively small, with no well-defined median series; the femoral pores vary between 17 and 24 (average 19.8 in 41 counts; 14 to 20 in Texas specimens, *fide* Burt[2]); the snout–vent measurement of the largest specimen is 81.5 mm. The differences between the two populations would certainly be considered subspecific if the geographically intermediate Mexican specimens were not also intermediate in at least these characters of differentiation.

Ameiva undulata parva Barbour and Noble

Seven specimens (E.H.T. Nos. 11925–31) from Progreso, and one (E.H.T. No. 11985) from Chichen Itzá. The specimens differ from *u. undulata* in the reduction in size and irregularity of the median throat scales, and in the presence of very distinct lateral bars, in males, extending to the dorsolateral region. A light, dorsolateral line is absent in the males.

[2] "The Status of the Spotted Race-Runner, *Cnemidophorus sexlineatus gularis* (Baird and Girard)," *Bull. U. S. Nat. Mus.*, 154 (1931): 112.

In the Yucatán specimens of *u. parva* (including data on twenty-two recorded by Norman Hartweg), the transverse diameter of the largest throat scale is equal to or less than the transverse diameter of the largest preanal scale in 96.7 per cent (twenty-five specimens of twenty-six); in Campeche *u. undulata,* the diameter of the largest throat scale is greater than that of the largest preanal in 83.6 per cent.

A similar comparison between the relative diameters of the largest throat and mesoptychial scales may be made; 80 per cent of the *u. parva* have them equal or the diameter of the mesoptychial scales greater, and 83.6 per cent of *u. undulata* have the throat scales greater.

The lamellae on the fourth toe average more numerous in *u. parva* (88 per cent 29 or more) than in *u. undulata* (82.3 per cent 28 or less). The femoral pores are usually 18 or more in *u. parva* (70.5 per cent), usually 17 or less in *u. undulata* (81 per cent).

In the eight specimens of *u. parva,* the lamellae on the fourth toe average 29.4, varying between 27 and 33; the femoral pores average 18.1, varying between 15 and 21. The preanals are irregular in two, in two rows in six. The largest male measures 100 mm. snout to vent, the largest female 90 mm.

Mabuya mabouya mabouya (Lacépède)

One specimen (E.H.T. No. 14432) from Progreso, and one (E.H.T. No. 14433) from Mérida.

Thamnophis sauritus rutiloris (Cope)

Eutaenia rutiloris Cope, *Proc. Amer. Phil. Soc.,* 22 (1885): 388–89 (type locality Cozumel Island, Yucatán).

Forty-two specimens have been examined: VERA CRUZ, Cuatotolapam (U.M.M.Z. Nos. 41555–56); twenty-five miles from Estero Chicharas (U.M.M.Z. No. 69256); Encero (E.H.T. No. 4995); Tierra Colorada, near Vera Cruz (E.H.T. No. 4991–4). CAMPECHE, Balchacaj (E.H.T. Nos. 11649–74). YUCATÁN, La Cienega, south of Progreso (U.M.M.Z. Nos. 80807–9); Progreso (E.H.T. Nos. 11675–76); Telchak

(U.M.M.Z. No. 76163[2]). Costa Rica, Cartago (U.M.M.Z. No. 74299).

These have been compared with thirty-one Mexican specimens of *sauritus proximus,* from the following localities: NUEVO LEÓN, four miles west of Sabinas Hidalgo (E.H.T. Nos. 5430–35); Huaxteca Canyon, eleven miles west of Monterrey (E.H.T. Nos. 5292–97); five miles south of Monterrey (E.H.T. Nos. 4999–5000). TAMAULIPAS, kilometers 1030–36, near Ciénaga de Flores (E.H.T. Nos. 5288–91); Hacienda La Clementina, three miles west of Forlón (E.H.T. Nos. 5001–10); Matamoras (U.M.M.Z. No. 3699). CHIAPAS, Comitán (E.H.T. No. 15344).

The variation in ventral and caudal counts of the specimens examined of both subspecies is given in Plate I. Other variations in *s. rutiloris* are: scale rows 19–15 in 3, 19–17 in 39; supralabials 8–8 in all; infralabials 9–9 in 1, 9–10 in 4, 10–10 in 33, 10–11 in 2; 1 preocular in all; postoculars 3–4 in 2, 3–3 in 39. The tail length varies from 26.9 per cent to 30.7 per cent of the total length. Specimens from Campeche differ from others of the subspecies in having the light stripes very indistinct.

The variation in the Mexican specimens of *s. proximus* is similar to that of *s. rutiloris.* Supralabials 9–9 in 1, 8–8 in 30; infralabials 9–10 in 1, 10–10 in 28, 10–11 in 1, 11–11 in 1; 1 preocular in all; 2–3 postoculars in 1, 3–3 in 30. The tail length varies from 27.3 per cent to 31.4 per cent of the total length.

So far as I can determine, *s. rutiloris* differs from *s. proximus* only in ventral and caudal scale counts. Specimens of *s. rutiloris* from Vera Cruz and of *s. proximus* from southern Tamaulipas tend somewhat toward each other in these counts. There is no overlap in total ventral and caudal counts.

The specimen from Comitán, Chiapas, has 167 ventrals, and the tail is broken. It differs from specimens of both Mexican subspecies of *sauritus* in having the lateral stripe almost completely confined to the third scale row, extending but very slightly on the fourth. Since the specimen is from an area

widely isolated from the other areas inhabited by *s. proximus*, which it most closely resembles, it appears at least possible that it represents another race.

Drymarchon corais melanurus (Duméril and Bibron)

One specimen (E.H.T. No. 11636) from Mérida.

Eudryas boddaerti melanolomus (Cope)

One male specimen (E.H.T. No. 11620) from Chichen Itzá. Scale rows, 17–17–15; ventrals, 181; caudals, 116. Total length, 1320 mm.; tail, 406 mm.

Conophis concolor Cope

One male specimen (E.H.T. No. 11635) from Chichen Itzá. Scale rows, 19–19–17; ventrals, 163; caudals, 74; total length, 760 mm.; tail, 178 mm. The dark dorsal and lateral bands on the head are short, breaking up into spots immediately behind the head, and completely disappearing on the neck.

II. Campeche

Thomas and I were at Campeche from August 30 to September 1, 1936, when our boat left for Ciudad del Carmen (popularly called Laguna). We collected on the island of Carmen until September 6. On that date we crossed the Laguna de Términos, and landed at Balchacaj, an hacienda at the mouth of the Río Chumpán. On September 16 I went with Mr. Martin up the Río Chumpán to Tres Brazos, about two leagues from the Tabascan border, near the junction of the Río San Joaquín and Río Salsipuedes. We returned on September 20, remaining at Balchacaj until September 28, then went to Ciudad del Carmen, and left on September 29 for Encarnación, an hacienda one league east of Granada; we arrived there October 1. On the fifteenth I left for Pital, and on the sixteenth I journeyed to Panlao, which is situated on a very small island at the mouth of the Laguna de Panlao. On the seventeenth Adolfo Morales, my generous host at Panlao, provided transportation to Balchacaj. Collecting in

Campeche was terminated October 18, with the accumulation of 1424 specimens representing 55 species.

The herpetological faunas of the island of Carmen, of Balchacaj, and of Encarnación are somewhat different. Carmen Island is largely under cultivation, covered by large tracts of coconut plantations. The soil is sandy and dry. The native vegetation is sparse and low. Snakes are rare, and some of the lizards are either introduced species or strictly coastal forms.

Balchacaj and Encarnación lack several species of lizards common on Carmen Island, but their fauna is much richer. Balchacaj is very low, the entire country surrounding it is under water varying in depth from a few inches to two feet. Only slight elevations along the river banks and a few low hummocks farther inland are above water, at least during the rainy season. The river banks are overgrown with low vegetation, and similar islands of low bush occur in the interior. The remaining area, greater in extent, is grassland.

During the rainy season, the rivers constantly flow toward the lake, but very seldom rise high enough to flow over the natural levees. During the dry season the tide daily enters the rivers and goes far up, nearly to the headwaters, at least, of the Río Chumpán.

Encarnación is considerably more elevated than Balchacaj. The terrain is rolling, with numerous limestone hills. The vegetation is very high, the trees much larger than at Balchacaj. In the larger forests the ground is more or less barren, but in the lower bush, mostly neglected areas cleared several years before, the vegetation is almost impenetrable. There appeared to be no natural savannas; all the grasslands which I observed were obviously cleared for grazing or cultivation plots.

Unfortunately, I arrived in Campeche long after the rainy season had started. Most of the amphibians had already disappeared, and would emerge, in small numbers, only on rainy nights, although never was there a scarcity of standing water.

Localities in Campeche other than those that I visited, and from which specimens are reported below, are:

Apazote: Lat. 18° 53′ N., Long. 90° 21′ W.
Balakbal: Lat. 18° 52.8′ N., Long. 89° 35.2′ W.
Becan: Lat. 18° 31′ N., Long. 89° 25′ W.
Jaina: Lat. 20° 13′ N., Long. 90° 28′ W.
Oxpemul: Lat. 18° 18.3′ N., Long. 89° 47.9′ W.
Pared de los Reyes: Lat. 17° 58.7′ N., Long. 89° 48.2′ W.
Río Bec: Lat. 18° 23′ N., Long. 89° 18.5′ W.
Sama: Three miles southwest of Laguna de Panlao, on the shore of Laguna de Términos.

So far as I can determine, records of reptiles and amphibians from Campeche have been included in only four papers. Fischer[3] records and describes *Eumeces schwartzei*; Schmidt[4] describes *Micrurus affinis stantoni* (= *Micrurus affinis alienus*), including one Campeche paratype; Dunn and Stuart[5] describe *Leptodeira yucatanensis malleisi*, including the type and one paratype from Campeche; and Gaige[6] records thirty-six species from the state.

The herpetological fauna of the state as known at present is as follows (starred forms indicate additional records made in this paper):

1. *Rhinophrynus dorsalis*
2. *Bufo marinus*
3. *Bufo valliceps*
*4. *Engystomops pustulosus*
5. *Leptodactylus labialis*
6. *Leptodactylus melanonotus*
7. *Agalychnis morelettii*
8. *Hyla baudinii*
*9. *Hyla loquax*
10. *Hyla staufferi*[7]
*11. *Hyla underwoodi*
12. *Hyla venulosa*
13. *Hypopachus cuneus*[8]
*14. *Microhyla elegans*
*15. *Rana palmipes*
16. *Rana pipiens*
*17. *Hemidactylus turcicus*
18. *Sphaerodactylus glaucus*
19. *Coleonyx elegans*
20. *Anolis aureolus*
*21. *Anolis biporcatus*
*22. *Anolis kidderi*
*23. *Anolis sagrei*
*24. *Anolis tropidonotus*

[3] "Herpetologische Bemerkungen," *Abh. Nat. Ver. Hamburg*, 8 (1884): 3.

[4] "Preliminary Account of the Coral Snakes of Central America and Mexico," *Zool. Ser. Field Mus. Nat. Hist.*, 20 (1933): 36.

[5] "A New Race of *Leptodeira* from Northern Central America," *Occ. Papers Mus. Zool. Univ. Mich.*, 313 (1935): 1–3.

[6] "Some Reptiles and Amphibians from Yucatán and Campeche," *Carnegie Inst. Publ.*, 457 (1936): 289–304.

25. *Anolis ustus ustus*
*26. *Corythophanes cristatus*
27. *Laemanctus serratus*
28. *Basiliscus vittatus*
*29. *Iguana iguana rhinolopha*
30. *Ctenosaura similis*
*31. *Ctenosaura erythromelas*
32. *Sceloporus chrysostictus*
*33. *Sceloporus teapensis*
*34. *Sceloporus serrifer serrifer*
*35. *Sceloporus lundelli lundelli*
*36. *Cnemidophorus deppii deppii*
37. *Cnemidophorus gularis*
38. *Ameiva undulata undulata*
39. *Mabuya mabouya mabouya*
*40. *Leiolopisma assatum*
41. *Eumeces schwartzei*
42. *Constrictor constrictor imperator*
*43. *Thamnophis sauritus rutiloris*
44. *Masticophis mentovarius*
45. *Drymobius margaritiferus*
46. *Spilotes pullatus mexicanus*
47. *Elaphe flavirufa*
*48. *Leptophis mexicanus*
*49. *Leptodeira polysticta*
50. *Leptodeira yucatanensis malleisi*
*51. *Imantodes gemmistratus*
52. *Conophis concolor*
*53. *Coniophanes imperialis clavatus*
*54. *Pliocercus elapoides*
55. *Ninia sebae morleyi*
56. *Micrurus affinis alienus*
*57. *Trimeresurus atrox*
58. *Crotalus durissus durissus*
*59. *Chelydra serpentina*
60. *Dermatemys mawii*
*61. *Claudius angustatus*
*62. *Kinosternon berendtianum*
63. *Kinosternon cruentatum*
*64. *Kinosternon leucostomum*
65. *Geoemyda areolata*
*66. *Eretmochelys imbricata*
*67. *Crocodylus morelettii*
*68. *Crocodylus acutus*

Rhinophrynus dorsalis Duméril and Bibron

Two specimens (E.H.T. Nos. 12589–90), both from Encarnación. They were found under stones. None were heard calling.

Bufo marinus (Linnaeus)

Twenty-seven specimens (E.H.T. Nos. 12952–56, 12958–77, 13610, 13616) from Balchacaj, sixteen (E.H.T. Nos. 12949–51, 13579–80, 13625–35) from Ciudad del Carmen, two from Tres Brazos (E.H.T. Nos. 12979, 13642), two (E.H.T. Nos. 12980–81) from Encarnación, and one (E.H.T. No. 12982) from Pital.

Bufo valliceps Wiegmann

Seven specimens (E.H.T. Nos. 13526, 13581–82, 13623–24, 13636–37) from Ciudad del Carmen, forty-six (E.H.T. Nos.

[7] *Hyla culex* Dunn and Emlen is considered synonymous.
[8] *Hypopachus inguinalis* Gaige (*loc. cit.*, p. 294) is identical.

12956, 13535, 13540A–45A, 13583–13609, 13611–15, 13617, 13638–41, 13646) from Balchacaj, two (E.H.T. Nos. 13505–6) from Campeche (city), twenty-four (E.H.T. Nos. 13507, 13527–29, 13536–40, 13542–51, 13620–21, 13643–45) from Encarnación, two (E.H.T. Nos. 13618–19) from Tres Brazos, and two (U.M.M.Z. Nos. 76114–15) from Becán.

Engystomops pustulosus (Cope)

Twenty-four specimens (E.H.T. Nos. 12703–26) from Encarnación.

Leptodactylus labialis Cope

Two hundred and forty-five specimens from the following localities: Encarnación (E.H.T. Nos. 13647–70, 13684–13728, 13731, 13737–42, 13744, 13902, 13905–16, 13923, 13925–40, 13956–57), Balchacaj (E.H.T. Nos. 13755–58, 13760–63, 13768, 13775, 13779–80, 13782–13814, 13816–38, 13844–64, 13873–93, 13973–79, 13981–83), Tres Brazos (E.H.T. Nos. 13897–13900, 13980), Pital (E.H.T. Nos. 13960–71).

Leptodactylus melanonotus (Hallowell)

One hundred and two specimens from the following localities: Encarnación (E.H.T. Nos. 13671–83, 13729–30, 13732–36, 13743, 13745–51, 13901, 13903–4, 13917–22, 13924, 13941–55, 13958), Balchacaj (E.H.T. Nos. 13752–54, 13759, 13764–67, 13769–74, 13776–78, 13781, 13815, 13839–43, 13865–72, 13972, 13984–86, 13988), Tres Brazos (E.H.T. Nos. 13894–96, 13989–96), Pital (E.H.T. No. 13959). This species and *Engystomops pustulosus* have calls that are remarkably similar. The call lasts about half a second. A comparable sound would be produced by plucking a stringed instrument and, at the instant of plucking, moving the finger down the scale (the notes descending). The sound is somewhat vibratory but is not a trill.

The call of *Leptodactylus labialis* is rather similar, but the notes ascend instead of descend. The call of all three of these frogs have in common the same peculiar, resonant quality

somewhat different from the calls of other amphibians with which I am familiar in southern Mexico.

Hyla baudinii Duméril and Bibron

Eighteen specimens (E.H.T. Nos. 12727–32, 12758–67, 12818–19) from Ciudad del Carmen, fifty-nine (E.H.T. Nos. 12733, 12768–12816, 12820–23, 12829–31, 12871–72) from Balchacaj, forty-six (E.H.T. Nos. 12734–37, 12817, 12832–69, 12873–74, 13940) from Encarnación, two (E.H.T. Nos. 12738, 12870) from Pital, and five (E.H.T. Nos. 12824–28) from Tres Brazos.

Hyla loquax Gaige and Stuart

Two specimens (E.H.T. Nos. 12591–92) from Tres Brazos and one (E.H.T. No. 12592) from Encarnación. The species seems to prefer deep water. All heard singing were on vegetation in water at least three feet deep.

Hyla staufferi Cope

Seventy-one specimens (E.H.T. Nos. 12875–12945) from Encarnación, and two (E.H.T. Nos. 13760, 13987) from Balchacaj. There were eggs in the abdomens of all females.

Hyla underwoodi Boulenger

Three specimens (E.H.T. Nos. 12522–23, 12580) from Tres Brazos, seventy-four (E.H.T. Nos. 12513–21, 12523A, 12524–79, 12581–88) from Encarnación, nine (E.H.T. Nos. 12513–21) from Balchacaj. The coloration agrees with the description given by Stuart.[9]

Hyla venulosa (Laurenti)

Two specimens (E.H.T. Nos. 12693–94) from Tres Brazos, and one (U.M.M.Z. No. 76116) from Becán.

Hypopachus cuneus Cope

Ninety specimens (E.H.T. Nos. 12594–12605, 12612, 12614–90) from Encarnación, one from Pital (E.H.T. No. 12691),

[9] "A Contribution to a Knowledge of the Herpetology of a Portion of the Savanna Region of Central Petén, Guatemala," *Misc. Publ. Mus. Zool. Univ. Mich.*, 29 (1935): 39.

six from Tres Brazos (E.H.T. Nos. 12606–11), and one from Balakbal (U.M.M.Z. No. 76117).

Microhyla elegans (Boulenger)

One specimen (E.H.T. No. 12692) from Tres Brazos, and one (U.M.M.Z. No. 76118) from Becán.

Rana palmipes Spix

Six specimens (E.H.T. Nos. 14023–28) from Tres Brazos. All the specimens seen of this species were congregated at one small pool, where these were taken. When disturbed they leaped and, at the same time, emitted a peculiar, characteristic, low croak. In life the specimens were pale green anteriorly, light brown posteriorly.

Rana pipiens Schreber

Sixteen specimens (E.H.T. Nos. 13997–14007, 14011–14, 14022) from Balchacaj, three (E.H.T. Nos. 14008–10) from Tres Brazos, and seven (E.H.T. Nos. 14015–21) from Encarnación.

Hemidactylus turcicus (Linnaeus)

Thirty-seven specimens (E.H.T. Nos. 11396–11432) from Ciudad del Carmen.

Sphaerodactylus glaucus Cope

Ten specimens (E.H.T. Nos. 11443, 14371–79) from Ciudad del Carmen, seventy-two (E.H.T. Nos. 11444–11510; U.M.M.Z.) from Balchacaj, and one (U.S.N.M. No. 47796) from Apazote.

Coleonyx elegans Gray

Three specimens (E.H.T. Nos. 11440–42) from Encarnación, and one (U.S.N.M. No. 47795) from Apazote. The former three were found running about at night on the ground in heavy woods.

Anolis aureolus Cope

One specimen (E.H.T. No. 01245) from Balchacaj, six (E.H.T. Nos. 01561–63, 01583–84, 01657) from Tres Brazos,

and nine (E.H.T. Nos. 02015, 02020, 02172–75, 02185, 02296, 02331–32) from Encarnación.

Anolis biporcatus Wiegmann

Six specimens (E.H.T. Nos. 01586, 11528–29, 11531–33) from Tres Brazos, five (E.H.T. Nos. 02016, 11534–37) from Encarnación, and one (U.M.M.Z. No. 76121) from Becán.

Anolis kidderi Ruthven

One specimen (E.H.T. No. 11525) from Ciudad del Carmen, and one (U.M.M.Z.) from Balchacaj. The former was found on a low bush in an area of scrubby growth near the airport about one-half mile from the coast.

The specimens (both females) have been compared with the type of *kidderi,* and are found to agree in all details except that one of them has keeled supraoculars. The measurements of the two specimens, respectively, are: snout to vent, 48.5 mm., 48.8 mm.; tail, 87 mm., 105 mm.; head to anterior border of ear, 12 mm., 12.5 mm.; tibia, 10 mm. in both.

Anolis sagrei Duméril and Bibron

Twelve specimens (E.H.T. Nos. 01046–47, 01050–52, 01056–59, 01061–63) from Balchacaj, seven (E.H.T. Nos. 11443, 11517–22) from Ciudad del Carmen, and one (E.H.T. No. 11523) from Panlao. The species apparently does not occur inland.

Anolis tropidonotus Peters

One specimen from Encarnación (E.H.T. No. 11527) and one from Becán (U.M.M.Z. No. 76120).

Anolis ustus ustus Cope

One specimen (E.H.T. No. 11526) from Tres Brazos and two (U.M.M.Z.) from Balchacaj. They differ from *kidderi* only in having the supraorbital semicircles separated from each other and from the occipital.

Corythophanes cristatus (Merrem)

Two specimens, one (U.M.M.Z. No. 76124) from Pared de los Reyes and the other (U.M.M.Z. No. 76123) from Oxpemul.

Laemanctus serratus Cope

One specimen (U.M.M.Z. No. 76122) from Oxpemul.

Basiliscus vittatus Wiegmann

Seven specimens (E.H.T. Nos. 14071–72, 14074–75, 14079, 14288–89) from Balchacaj, twelve (E.H.T. Nos. 14073, 14076–77, 14290–98) from Tres Brazos, twenty-nine (E.H.T. Nos. 14078, 14299–14324, 14327–28) from Encarnación, and two (E.H.T. Nos. 14325–26) from Pital.

Iguana iguana rhinolopha Wiegmann

Four specimens (E.H.T. Nos. 14186, 14194, 14489–90) from Ciudad del Carmen.

Ctenosaura similis (Gray)

Twenty-four specimens (E.H.T. Nos. 14176–77, 14179–81, 14187–93, 14194–95, 14231–39, 14491) from Ciudad del Carmen, and seventeen (E.H.T. Nos. 14196–14210, 14240; U.M.M.Z.) from Balchacaj.

Ctenosaura erythromelas Boulenger

One specimen (E.H.T. No. 11513) was collected at Balchacaj, the first known locality for the species. The specimen agrees in all details with Bailey's[10] description.

Sceloporus chrysostictus Cope

Twelve specimens (E.H.T. Nos. 13000–11) from Ciudad del Carmen, five (E.H.T. Nos. 13012–14, 13021–22) from Balchacaj, and five (E.H.T. Nos. 13015–19) from Tres Brazos.

Sceloporus teapensis Günther

Ten specimens (E.H.T. Nos. 9972–81) from Tres Brazos.

Sceloporus serrifer serrifer Cope

Five specimens (E.H.T. Nos. 9937–41) from Balchacaj.

[10] "A Revision of the Lizards of the Genus Ctenosaura," *Proc. U. S. Nat. Mus.*, 73 (1928): 46–48.

Sceloporus lundelli lundelli Schmidt

Fourteen specimens (E.H.T. Nos. 9945–55; U.M.M.Z. Nos. 81906–8) from Balchacaj and one (U.S.N.M. No. 46862) from Jaina.

Cnemidophorus deppii deppii Wiegmann

Twenty-nine specimens (E.H.T. Nos. 11842, 11845A, 11846A, 11846–71) from Ciudad del Carmen.

Ameiva undulata undulata (Wiegmann)

Fourteen specimens (E.H.T. Nos. 11932–36, 11986–87, 13112; U.M.M.Z.) from Balchacaj, forty-three (E.H.T. Nos. 11937–41, 11988–99, 13087–13112) from Tres Brazos, and five (E.H.T. Nos. 11942–45, 13114) from Encarnación. Most of the specimens are young, only fifteen measuring over 70 mm. snout to vent. The largest male measures 88.5 mm., the largest female 110 mm.

The specimens are referred to *u. undulata* with the assumption that the type locality of *undulata* is somewhere in the Atlantic coastal region of Mexico between the states of Vera Cruz and Campeche. The specimens from this region are more or less uniform in scale characters, which agree in general with those of the type as depicted by Bocourt.[11]

The Campeche specimens differ from Vera Cruz specimens, so far as I can determine, only in the absence of a broad, light dorsolateral light line in males.

The preanal scales are in two rows in 76.4 per cent, are irregular (one or more entire, median scales) in 18.1 per cent, and in one median row in 5.5 per cent. The femoral pores average 16.3, and vary between 14 and 20. The lamellae under the fourth toe average 26.3, varying between 21 and 31.

Mabuya mabouya mabouya (Lacépède)

Ten specimens (E.H.T. Nos. 14434–36, 14438–39, 14449–51, 14458; U.M.M.Z.) from Balchacaj, nine (E.H.T. Nos. 14440–48) from Tres Brazos, five (E.H.T. Nos. 14452–56) from Encarnación, and one (E.H.T. No. 14457) from Panlao.

[11] *Mission Scientifique au Mexique*, 4 (1874): Pl. 20A, Figs. 7–7*e*.

Leiolopisma assatum (Cope)

One specimen (E.H.T. No. 01635) from Tres Brazos. It was routed from under fallen banana leaves. The snout–vent measurement is 38 mm.; the adpressed limbs touch. There are 28 scale rows at the middle of the body. The character of the nuchal scales cannot be determined, as they were rubbed off in the capture of the specimen. The coloration is similar to that of specimens from Guatemala and Honduras.

Eumeces schwartzei Fischer

One specimen (E.H.T. No. 11511) from Tres Brazos, and one (E.H.T. No. 11512) from Encarnación. The former was found basking in the sun on the trunk of a fallen banana tree, the other was found under tile.

Constrictor constrictor imperator (Daudin)

Five specimens (E.H.T. Nos. 11644–48) from Balchacaj.

Thamnophis sauritus rutiloris (Cope)

Twenty-six specimens (E.H.T. Nos. 11649–74) from Balchacaj. The status of the subspecies is discussed in the section on Yucatán.

Drymobius margaritiferus (Schlegel)

Two female specimens, one (E.H.T. No. 11623)from Balchacaj the other (U.M.M.Z. No. 76125) from Becán. The scale counts, respectively, are: scale rows, 17–17–15 in both; ventrals, 148, 150; caudals, 115, 107; total length, 781 mm., 470 mm.; tail, 276 mm., 155 mm. Another specimen (U.S.N.M. No. 46454) is from Campeche (city).

Elaphe flavirufa (Cope)

One specimen (U.S.N.M. No. 14848) is possibly from Campeche. It was taken "from a cargo of logwood discharged in New York about the middle of December, 1888."

Leptophis mexicanus Duméril and Bibron

Three male specimens were collected at Balchacaj (E.H.T. Nos. 11624–26). The scale rows are 15–15–11 in each speci-

men, supralabials, 8–8, infralabials, 10–10, preocular, 1–1, postoculars, 2–2, temporals, 1–2 except in one specimen which has the large anterior temporal divided transversely. The anal plate is entire in one specimen. The ventrals and caudals respectively count as follows: 158, 144+; 160, 154; 158, 143.

Leptodeira polysticta Günther

Two specimens, one (E.H.T. No. 11616 from Encarnación the other (E.H.T. No. 11617) from Pital.

Leptodeira yucatanensis malleisi Dunn and Stuart

One specimen (E.H.T. No. 11618) from Encarnación, one from Pital (E.H.T. No. 11619), and one (U.M.M.Z.) from Balchacaj.

Imantodes gemmistratus Cope

Two female specimens (U.M.M.Z.) from Balchacaj. The total length of one is 628 mm., tail, 180 mm.; the other specimen measures 738 mm., tail, 214 mm. The ventrals and caudals, respectively, of the former are 220 and 126; of the latter, 215 and 120. There are 47 bands on the body of the smaller specimen, on the tail, 31; in the larger specimen the body bands number 43, the tail spots, 33. In the former the bands are broken laterally on the posterior fifth of the body; in the other specimen they are broken on the posterior third of the body.

Coniophanes imperialis clavatus Peters

Five specimens (E.H.T. Nos. 15207–11) from Balchacaj, identified by Joseph Bailey.

Pliocercus elapoides Cope

One male specimen (E.H.T. No. 11642) from Tres Brazos and one female (E.H.T. No. 11643) from Encarnación. The scale rows are 17–17–17; preoculars, 2–2; postoculars, 2–2; supralabials, 8–8; infralabials, 9–9; temporals, 1–1–2. The ventrals of the male count 128 (tail broken); the ventrals and caudals respectively of the female count 134 and 97.

The black bands are in triads, separated by narrow yellow bands, but in the female the narrower black bands are practically obsolete. A dark spot occurs at the posterior apex of most of the scales in the red bands. There are 17 red annuli on the body of the female, 13 on the tail; 12 red annuli occur on the body of the male.

Both specimens were found crawling about in the shade in heavily wooded areas. The female was caught by the tail and held by it for several seconds while I attempted to swing the head between my legs, thinking the snake was a *Micrurus*. While this was going on the snake began twisting violently and shortly parted the tail.

Ninia sebae morleyi Schmidt and Andrews

Four specimens (E.H.T. Nos. 11637–40) from Encarnación and one (E.H.T. No. 11641) from Pital. Two of those from Encarnación were collected at night as they were crossing trails; the other two from the same locality were observed crawling at the side of the trail in a heavily shaded area early in the morning on a cloudy day.

The specimens agree with Schmidt and Andrews[12] description, except that the nasal is divided, and preoculars are absent in all specimens except one. In this exception, there are three preoculars on each side, the loreal is short and more or less rounded, and the prefrontals are separated from the orbit. The ventral scale counts of the three males are (ventrals and caudals, respectively): 140, 50; 145, 50; 137, 46. Two young females have the following counts: 147, 40; 143, 38. The ventral counts of 143 in a female and 137 in a male are lower than the counts recorded from the type series by Schmidt and Andrews.

The largest specimen, a male, measures 341 mm. in total length, tail, 73 mm.

Micrurus affinis alienus (Werner)

One specimen (U.M.M.Z. No. 76126) from Oxpemul, identified by K. P. Schmidt. The black bands (25 on body, 5 on

[12] "Notes on Snakes from Yucatan," *Zool. Ser. Field Mus. Nat. Hist.*, 20 (1936): 169–71.

tail) are complete. The specimen is a female, with 219 ventrals and 41 caudals; 6 of the caudals are entire.

Trimeresurus atrox (Linnaeus)

Eight specimens (E.H.T. Nos. 11627–34) from Encarnación. The dorsal scale rows are 23–25–19, 25–25–19 (3), 27–27–19, 27–27–21 (2), 29–29–21. The ventral and caudal counts of three males are: 209, 64; 221, 66; 217, 69. The same counts of five females are: 217, 56; 216, 60; 219, 57; 214, 64; 219, 60. The supralabials are 7–7 in five, 7–8 in one and 8–8 in two; the infralabials are 9–10 in one, 10–10 in three, 10–11 in two, 11–11 in one, and 11–12 in one. The total and tail lengths (in mm.), respectively, of the males are: 347, 51.5; 457, 61; 389, 54. The measurements of the females are: 410, 50; 413, 49; 417, 49.5; 409, 52; 683, 84.

Crotalus durissus durissus Linnaeus

Two skins (U.S.N.M. Nos. 46399–46400) from Campeche (city).

Chelydra serpentina (Linnaeus)

One carapace and plastron (E.H.T. No. 15216) from Balchacaj. The character of the bridge (its width compared with the length of the plastron) is similar to that of specimens from the United States. The width of the bridge is 11 per cent of the length of the plastron. The only unusual feature is the presence of a small intergular scute on the plastron.

Dermatemys mawii Gray

One specimen (a carapace) from Balchacaj (E.H.T. No. 15237). It measures 453 mm. in length.

Claudius angustatus Cope

One specimen (U.M.M.Z.) from Balchacaj and one (U.M.M.Z. No. 76128) from Río Bec.

Kinosternon berendtianum Cope

Two specimens (E.H.T. Nos. 14419, 14421) from Balchacaj.

Kinosternon cruentatum Duméril

Sixteen specimens (E.H.T. Nos. 14383–96, 14401, 14420) from Balchacaj.

Kinosternon leucostomum Duméril

One specimen (U.M.M.Z. No. 76127) from Becán.

Geoemyda areolata (Duméril)

Two specimens, one (E.H.T. No. 14422) from Balchacaj the other (E.H.T. No. 15212) from Panlao.

Eretmochelys imbricata Linnaeus

One specimen (E.H.T. No. 15237) from Sama, collected by Adolfo Morales.

Crocodylus morelettii Duméril

Three preserved specimens are available from Campeche, two (E.H.T. Nos. 14426–27) from Balchacaj, and one (U.M.M.Z. No. 76119) from Becán. One live specimen from Encarnación is now existing at Kansas University.

Crocodylus acutus Cuvier

Two large skulls (see Table I) were found at Balchacaj (E.H.T. Nos. 15213–14). The differences between the specimens here referred to *morelettii* and *acutus* are not so striking as in the specimens reported by Schmidt.[13] As may be seen in the accompanying table, the comparative breadth and width of the skulls of *acutus* is similar to that of the specimens of *morelettii.* In outline, the skulls of *acutus* are no more slender than those of *morelettii,* and compare well with the figures given by Schmidt[14] of *morelettii.* However, the character of the cranial table and of the premaxillo-maxillary suture leads me to believe that the skulls are properly referred to *acutus.* The cranial table is much broader posteriorly than anteriorly, and the premaxillo-maxillary suture extends back-

[13] "Notes on Central American Crocodiles," *Zool. Ser. Field Mus. Nat. Hist.,* 12(1924): 79–92, pls. 5–9.

[14] *Ibid.:* Pls. 6–8.

TABLE I

MEASUREMENTS (IN MM.) OF THE SKULLS OF *C. ACUTUS* AND *C. MORELETTII*

Number	14427	14426	76119	11514	11513
Snout to supraoccipital	107	111	161	568	602
Snout to end of quadrate	116	122	170	644	685
Length of snout	65	66	92	406	430
Width of snout at base	37.5	41	59.5	228	229.5
Width at tenth tooth	32	36	50.5	...	182
Width at quadratojugals	52.5	58.5	85	327	345
Width of cranial table (ant.)	33.5	35.5	...	135	...
Width of cranial table (post.)	33	35.8	...	168	170

ward to the level of the posterior border of the seventh tooth. In the three specimens of *morelettii* the cranial table is parallel-sided, and the premaxillo-maxillary suture extends only to the level of the posterior margin of the sixth tooth, or to a point midway between the sixth and seventh teeth.

Since only skulls are available of *acutus,* no comparisons of external characteristics can be made. The three specimens referred to *morelettii,* however, exhibit the coloration described by Schmidt.[15]

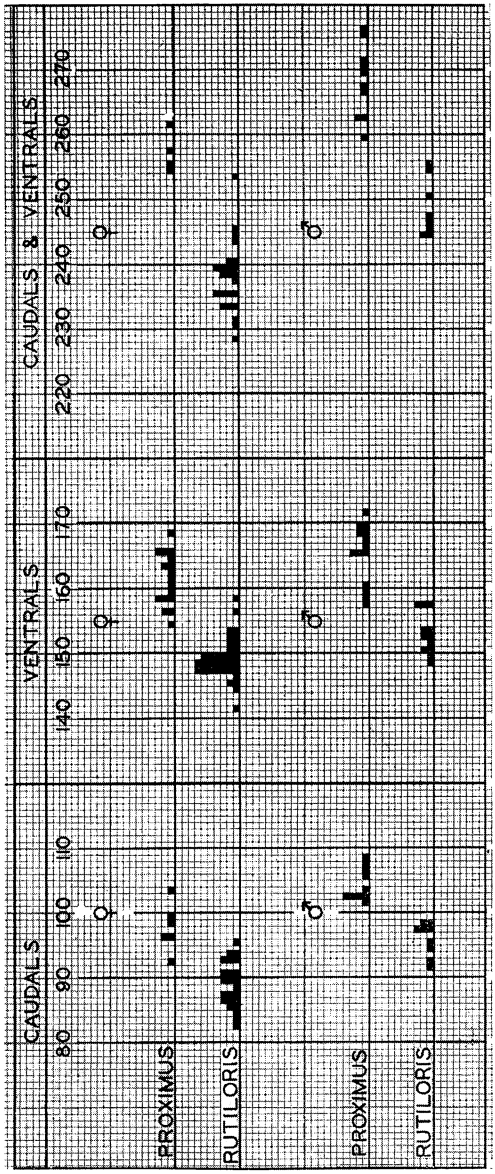
The total length of the specimen represented by the largest skull (E.H.T. No. 11513) was stated by John T. Martin as being 14 feet. I have a picture of this crocodile, taken shortly after its capture. The length seems not overestimated.

A third skull (E.H.T. No. 15215) was found on the beach at Panlao. The tip of the snout is missing and most of the bones have spread apart due to long exposure. Its estimated length, supraoccipital to snout, is 540 mm.; width at tenth tooth, 152 mm. (ratio, 28.1). The outline is narrower and the quadratojugals more flaring than in the other skulls of *acutus.* The cranial table and premaxillo-maxillary suture are typical of the species.

[15] *Ibid.:* p. 81.

PLATE I

Variation in caudal and ventral counts of *Thamnophis sauritus rutilorus* and *T. s. proximus*.


CAUDALS & VENTRALS
CAUDALS
80
90
100
110
VENTRALS
140
150
160
170
220
230
240
250
260
270
♀
♂
PROXIMUS
RUTILORIS
PROXIMUS
RUTILORIS