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A REVIEW OF THE HERPETOLOGY OF LOWER CALIFORNIA. PART I-REPTILES.

BY JOHN VAN DENBURGH, Curator of the Department of Herpetology. [With Plates iv-xiv.]

The peninsula of Lower California lies so far from the usual routes of travel that few collections of its animals have found their way into museums. Its reptiles have been known chiefly from the specimens secured by Botta, Xantus, and Belding. Within the past few years the California Academy of Sciences has sent several collectors to the peninsula, and among the specimens brought back each time have been a few reptiles. In this way the collection has been formed upon which this paper is primarily based.

A few remarks on the zoögeographical position of Lower California may not be out of place.

The Sonoran Subprovince, as defined by Dr. Allen, but excluding Lower California, is inhabited by the following forty genera of reptiles:*

Phyllodactylus,	Cnemidophorus,	Contia,
Dipsosaurus,	Verticaria,	Gyalopum,
Crotaphytus,	Eumeces,	Hypsiglena,
Callisaurus,	Rena,	Phyllorhynchus,
Holbrookia,	Leptotyphlops,	Salvadora,
Uma,	Lichanura,	Bascanion,
Sauromalus,	Charina,	Pituophis,
Uta,	Chilomeniscus,	Arizona,
Sceloporus,	Tantilla,	Thamnophis,
Phrynosoma,	Chionactis,	Natrix,
Heloderma,	Rhinochilus,	Trimorphodon,
Gerrhonotus,	Lampropeltis,	Elaps,
Anniella,	Diadophis,	Crotalus.
Xantusia,		

Twenty-nine of these range over a greater or less part

* The turtles are not considered in this discussion. 2D SER., Vol. V.

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of the Campestrian Subprovince on the north, or of the tropical Central American Region on the south. They need not, therefore, be considered in the present connection. Eleven genera remain which are confined to the Sonoran Subprovince, and may be considered characteristic of that area. These genera are:

Dipsosaurus,	Sauromalus,	Rena,
Callisaurus,	Heloderma,	Lichanura,
Holbrookia,	Xantusia,	Phyllorhynchus.
Uma,	Verticaria,	

In the so-called Cape Region of Lower California, twenty-eight genera of reptiles occur, namely:

Phyllodactylus,	- Cnemidophorus,	Hypsiglena,
Ctenosaura,	Verticaria,	Phyllorhynchus,
Dipsosaurus,	Enmeces,	Salvadora,
Crotaphytus,	Enchirotes,	Bascanion,
Callisaurus,	Rena,	Pituophis,
Uta,	Lichanura,	Thamnophis,
Sceloporus,	Chilomeniscus,	Natrix,
Phrynosoma,	Tantilla,	Trimorphodon,
Gerrhonotus,	Lampropeltis,	Crotalus.
Xantusia,		

Only two of these have not been obtained elsewhere in the Sonoran Subprovince, while, with the exception of Holbrookia, Uma, Sauromalus, and Heloderma, all the characteristic Sonoran genera are represented. The two Cape genera which have not been found in any other part of the Sonoran Subprovince are Euchirotes, a two-footed amphisbænian which has been secured only in southern Lower California, and Ctenosaura, a genus widely distributed in tropical America and here represented by a single species.

Considering now the species of these areas, it is found that seventy-eight have been obtained in the Sonoran Subprovince.* Twenty-one of these are of partly or

^{*}Some of the eastern and southern species have not been included for lack of precise data.

chiefly Campestrian or tropical distribution, leaving fiftyseven species which may be considered distinctively Sonoran.

Thirty-eight species have thus far been found in the southern part of Lower California,* as follows:

Phyllodactylus tuberculosus,	Lichanura trivirgata,
Phyllodaetylus unctus,	Chilomeniscus stramineus,
Ctenosaura hemilopha,	Chilomeniscus fasciatus,
Dipsosaurus dorsalis,	Tantilla planiceps,
Crotaphytus copeii,	Lampropeltis conjuncta,
Callisaurus draconoides,	Lampropeltis nitida,
Uta thalassina,	Hypsiglena ochrorhyncha,
Uta stansburiana,	Phyllorhynchus decurtatus,
Uta nigricauda,	Salvadora grahamiæ,
Sceloporus zosteromus,	Bascanion flagellum frenatum,
Sceloporus licki,	Bascanion aurigulum,
Phrynosoma coronatum,	Pituophis vertebralis,
Gerrhonotus multicarinatus,	Thamnophis cyrtopsis collaris,
Xantusia gilberti,	Natrix valida,
Cnemidophorus maximus,	Natrix celæno,
Verticaria hyperythra,	Trimorphodon lyrophanes,
Eumeces lagunensiś,	Crotalus atrox,
Euchirotes biporus,	Crotalus enyo,
Rena humilis,	Crotalus mitchellii.

None of these have been found upon the tropical Mexican mainland. Uta nigricauda, Sceloporus zosteromus, Phrynosoma coronatum, and Phyllorhynchus decurtatus, range considerably north of the confines of the "Cape Region." Twenty-two of the thirty-eight species are of very limited distribution, having been found only in the extreme southern part of the peninsula. The remaining twelve forms, mentioned below, extend their range over a greater or less part of the Sonoran Subprovince, and are among those characteristic of that area.[†]

^{*} Several species, as *Xantusia vigilis, Charina bottæ*, and *Lampropeltis californiæ*, have often been credited to Lower California without evidence of their occurring there.

^{*} Except Uta stansburiana, which is also Campestrian.

Phyllodaetylus tuberculosus,	Bascanion flagellum frenatum,
Dipsosaurus dorsalis,	Thamnophis cyrtopsis collaris,
Uta stansburiana,	Natrix valida,
Rena humilis,	Trimorphodon lyrophanes,
Hypsiglena ochrorhyncha,	Crotalus atrox,
Salvadora grahamiæ,	Crotalus mitchellii.

Formulating these data we have the following tables:

GENERA.

Total number in the Sonoran Subprovince	40
Confined to the Sonoran Subprovince	11
Total number in the "Cape Region "	29
Restricted to the "Cape Region"	1
Common to the "Cape Region" and Tropical America	1
Common to the "Cape Region" and the Sonoran Subprovince	26

SPECIES.

Total number in the Sonoran Subprovince	78
Confined to the Sonoran Subprovince	57
Total number in the "Cape Region"	38
Restricted to the "Cape Region"	22
Common to the "Cape Region" and Tropical America	0
Common to the "Cape Region" and the Sonoran Subprovince	12

From these it appears that the affinities of the reptiles which inhabit southern Lower California are almost entirely with those of the Sonoran Subprovince, of which the "Cape Region," therefore, forms a part. It is also shown that a strongly characterized center of reptilian distribution is located in the terminal part of the peninsula, entitling it to rank as one of the minor constituent life areas or faunæ of the Sonoran Subprovince. For this area Dr. Allen has already proposed the name "Saint Lucas Fauna."

It is unfortunate that so little material has been collected on that part of the peninsula which is just north of La Paz, for on this account the northern limit of this San Lucas Fauna cannot, at present, be determined with accuracy. A sufficient number of specimens has been obtained, however, to show that this fauna is apparently restricted to the rather mountainous area south of La Paz.

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There is in this area, as has already been shown, a slight infusion of tropical forms, represented among reptiles by the genera Ctenosaura and Euchirotes, but probably best illustrated by the plants growing near the coast lagoons. These forms, however, are doubtless no more numerous or characteristic than those forms, of tropical origin, which will be found to intrude upon the entire southern border of the Sonoran Subprovince.

The northern part of Lower California is much more closely related to the rest of the Sonoran Subprovince than to the San Lucas Fauna. This is well shown by the presence of such forms as *Callisaurus ventralis*, *Crotaphytus wislizenii*, *Phrynosoma solare*, *Rhinochilus lecontei*, and *Cnemidophori* of the *tessellatus* group. While the known ranges of several species may be considerably enlarged in the future, the northwestern part of Lower California and the coastal slopes of San Diego (and Los Angeles?) County, California, seem to be so well characterized as to merit recognition as a distinct faunal area of the lowest rank. Its distinctive features are the presence of certain peculiar species, the absence of others occurring near by, and its forming the limit of distribution of species whose chief habitat is either north or south.*

Pending further evidence, this area may be known as the San Diegan Fauna.[†] Among the reptiles peculiar to it may be mentioned the following:[‡]

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^{*}In this connection I have had the use of a large collection of the reptiles of San Diego County, made by Messrs. Hyatt and Stoddard for the Leland Stanford Junior University, as well as the specimens belonging to the Academy.

t When this was written the author was not aware that this area had been previously recognized and mapped from study of other branches of animal life.

[†]Birds apparently belonging to the same list are *Pipilo fuscus senicula*, *Harporhynchus cinereus mearnsi*, and *Heleodytes bruneicapillus bryanti*.

Uta mearnsi (?),	Cnemidophorus stejnegeri,
Sceloporus orcutti,	Verticaria hyperythra beldingi(?),
Phrynosoma blainvillii,	Lichanura roseofusca,
Xantusia henshawi,	Lichanura orcutti.

Several forms of the neighboring areas have not been taken here, namely:

Uta repens,	Sauromalus ater,
Uta microscutata (?),	Sceloporus magister,
Cnemidophorus rubidus,	Sceloporus occidentalis,
Cnemidophorus tigris,	Phrynosoma frontale,
Xantusia vigilis,	Crotalus cerastes.

Northern species which have not been collected south

of this area are:

Sceloporus biseriatus,	Eumeces skiltonianus (?),
Sceloporus graciosus,	Lampropeltis boylii,
Gerrhonotus scincicauda,	Bascanion laterale,
Anniella pulchra,	Crotalus lucifer.

A few southern forms are also limited by it, as:

Sceloporus zosteromus,

Crotalus atrox.

The reptiles of the islands which naturally belong to Lower California may be divided into two groups, as follows:

(a) Species which are purely insular; as, Sauromalus hispidus, Uta palmeri, Phrynosoma cerroense, Cnemidophorus martyris, C. labialis, and Verticaria sericea.

(b) Species which occur also on the northern part of the peninsula; as, Uta microscutata, Uta stansburiana, Uta nigricauda, Sceloporus zosteromus, Verticaria hyperythra beldingi, Crotalus atrox, Crotalus mitchellii, and Callisaurus ventralis.

No species characteristic of the San Lucas Fauna has been collected on any of the islands.*

It has been thought best to redescribe many of the species which have been known only from the very brief and often inadequate original characterizations. The descrip-

^{*} With the possible exception of Crotaphytus copeii.

tions are all based upon alcoholic specimens. The colors have been determined by reference to Ridgway's "Nomenclature of Colors." Measurements are given in millimeters, unless otherwise stated. Only references to a species as it occurs in Lower California are included in the synonymies, except that the original description is cited in all cases. Whenever a citation has not been verified by actual reference to the original article, it has been given in quotation marks. When the article contains no original information about the species as it occurs in Lower California, the citation has been put in parenthesis. Most of the localities mentioned may be found on the map of Lower California, published in the second volume of the second series of these Proceedings.

I am indebted to Dr. Leonhard Stejneger for the reidentification of many of the specimens listed by Dr. Yarrow, and for the loan of specimens of *Sceloporus consobrinus*.

CARETTA IMBRICATA (L.)

Testudo imbricata.

(1766, Linn., Syst. Nat., 1, p. 350.)

Chelonia imbricata.

1887, Cope, Bull. U. S. Nat. Mus., No. 32, p. 24.

The Academy's collection contains a single carapace (No. 2249) of this turtle. It was obtained at San José del Cabo, by the Expedition of 1893. Mr. Bryant tells me that he has often seen them in the waters near the shore.

CHELONIA AGASSIZII Dum. & Boc.

Chelonia agassizii.

(1870, Duméril et Bocourt, Miss. Sci. au Mex., Reptiles, le livr., p. 26, pl. vi.)

1887, Cope, Bull. U. S. Nat. Mus., No. 32, p. 24.

Chelonia virgata.

1883, True, Bull. U. S. Nat. Mus., No. 24, p. 28.

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The green turtle has been taken at Cape San Lucas. It doubtless occurs in many places along the coast of the peninsula.

CHRYSEMYS NEBULOSA, new species. Plates iv, v and vi. *Pseudemys ornata*.

1883, True, Bull. U. S. Nat. Mus., No. 24, p. 33.

Diagnosis.—Allied to *C. ornata* (Gray), but without black centers in the costal ocelli, which are much more irregular and indistinct than in that form. The markings on the head, neck, and limbs, are much coarser, and the longitudinal lines less numerous. There are four yellow rays on the upper surface of the arm, instead of eleven.

Type.—Cal. Acad. Sci. No. 2244, "Mainland abreast of San José Island," Lower California,* W. E. Bryant.

Description of the Type. - The neck is clove brown with several pale longitudinal lines on each side. The highest one of these ends on the temple in a large oval spot of the same color. The lowest and largest is continued forward across the middle of the lower eyelid, giving off, at the lower edge of the inferior maxillary bone, a branch which, continuing forward, crosses to the upper jaw, runs past the anterior edge of the orbit, turns forward at a right angle, and terminates at the nostril. The five similar lines on the nape are continued forward over the top of the head, and, besides being more or less undulating, give rise to several short transverse branches. There are six longitudinal yellow rays on the forearm; one on each edge and two on each surface. Greenish vellow lines traverse the backs of the five fingers and four perfect toes. The vertebrals sometimes show black All the marginals are ornamented with black spots. ocelli. The plastron is marked with large longitudinal

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 $^{^{*}}$ Mr. Bryant informs me that the exact locality is Los Dolores, L. C., and that No. 2245 was also taken there.

seal brown blotches, not at all like the double lines on this region in *C. ornata*.

Length of carapace 80 mm. Its greatest width 63 mm.

A carapace (No. 2246) 283 mm. in length is much less distinctly marked than the type, but has a rather indistinct black-centered ocellus on each of the last pair of costal scutes. Another (No. 2247) 273 mm. long shows no trace of these ocelli, nor are they visible in the other alcoholic specimen (No. 2245), the carapace of which measures 194 mm.

Cal. Acad. Sci. No.	Locality.	Date.	Collector.
2244	Lower California, * abreast		W. E. Bryant.
2245	No data.*		
2246	"'†		
2247	San José del Cabo, L.C.		Gustav Eisen.

List of Specimens of Chrysemys nebulosa.

Phyllodactylus tuberculosus Wieg.

Phyllodactylus tuberculosus.
"(1835, Wiegmann, Acta. Acad. Cæs. Leop. Carol., xvii, 1, p. 241, pl. xviii, fig. 2.)"
(1887, Cope, Bull. U. S. Nat. Mus., No, 32, p. 28.)
Phyllodactylus xanti.
1863, Cope, Proc. Ac. Nat. Sci. Phila., p. 102.
(1866, Cope, Proc. Ac. Nat. Sci. Phila., p. 312.)
(1875, Cope, Bull. U. S. Nat. Mus., No. 1, pp. 50, 93.)
1883, Yarrow, Bull. U. S. Nat. Mus., No. 24, p. 73.
(1884, S. Garman, Bull. Essex Inst., xvi, 1, p. 12.)
(1887, Belding, West Am. Scientist, iii, 24, p. 98.)

The writer has not seen this species, which has been recorded from Cape San Lucas and La Paz.

^{*} From Los Dolores, by W. E. Bryant, fide Bryant, from memory.

⁺ From Agua Caliente, by W. E. Bryant, fide Bryant, from memory.

EXPLANATION OF PLATES.

PLATE IV.

Chrysemys nebulosa, new species.

Type. (No. 2244, Lower California, abreast of San José Island.) (One and seven-tenths times natural size.)

PLATE V.

Chrysemys nebulosa, new species.

Type. (No. 2244, Lower California, abreast of San José Island.) (One and seven-tenths times natural size.)

PLATE VI.

Chrysemys nebulosa, new species.

Type. (No. 2244, Lower California, abreast of San José Island.)

a. Head from side. (Twice natural size.)

- b. Head from above. (Twice natural size.)
- c. Fore limb from above. (Two and one-fourth times natural size.)
- d. Hind limb from below. (Two and one-fourth times natural size.)

e. Tail from above. (Twice natural size.)

PLATE VII.

Uta repens, new species.

Type. (No. 633, Comondu, Lower California.)

General view. (About one and three-tenths times natural size.)

PLATE VIII.

Uta repens, new species.

Type. (No. 633, Comondu, Lower California.)

a. Head from side. (Two and three-fourths times natural size.)

b. Head from below. (Two and three-tenths times natural size.)

c. Fore limb. (One and eight-tenths times natural size.)

d. Scales of arm. (Three times natural size.)

e. Hind limb. (One and four-tenths times natural size.)

Uta microscutata Van D.

Type. (San Pedro Martir Mt., Lower California.)

- f. Hind limb. (Three and four-tenths times natural size.)
- g. Fore limb. (Three and four-tenths times natural size.)

PLATE IX.

Uta microscutata Van D.

Type. (San Pedro Martir Mt., Lower California.)

a. General view. (One and four-tenths times natural size.)

b. Head from side. (Four and nine-tenths times natural size.)

c. Head from above. (Four and nine-tenths times natural size.)

d. Head from below. (Four times natural size.)

e. Section of back. (Five and six-tenths times natural size.) 2D SER., VOL. V. (11) May 28, 1895.





