American Museum Novitates

PUBLISHED BY THE AMERICAN MUSEUM OF NATURAL HISTORY
CENTRAL PARK WEST AT 79TH STREET, NEW YORK 24, N.Y.

NUMBER 1949 JUNE 17, 1959

The Provenance of Reptiles and Amphibians Collected in Western Mexico by J. J. Major

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INTRODUCTION

In the middle of the last century, the Smithsonian Institution received a number of specimens of reptiles and amphibians sent by Mr. J. J. Major[1] from Guadalajara, Jalisco, Mexico. The collection was an important one, and Major's specimens serve as types or cotypes of 10 species and subspecies, nine of which are currently recognized as valid. Most of these new forms were described by Cope between 1861 and 1887, although one was described by Smith as recently as 1942. Almost 100 years have elapsed since the collection was made, but most of the species in Major's collection have not been encountered at Guadalajara.

The apparent incorrectness of "Guadalajara" as a locality for many species has been noted by various authors, but apparently no one has concerned himself with more than one or two species at a time. With the aid of the catalogues of the United States National Museum, Division of Amphibians and Reptiles, and several of Cope's publications, I have compiled a list of the specimens collected by Major. The purpose of the present paper is to report the results of surveying the known distributions of the species represented in the collection, with the hope that the true locality or localities of collection might be more closely approximated.

[1] Cope gave the collector's name as "I. I. Major," but he is listed in the records of the United States National Museum with the initials "J. J."

The following abbreviations refer to the catalogue numbers of museum specimens:

A.M.N.H., the American Museum of Natural History
U.S.N.M., United States National Museum

I wish to thank Dr. Doris M. Cochran for her assistance in compiling the list of specimens collected by J. J. Major, and Mr. Charles M. Bogert for his helpful criticism of the manuscript.

SPECIMENS COLLECTED BY J. J. MAJOR

1. *Hyla (Smilisca) baudini* Duméril and Bibron, U.S.N.M. No. 24964.

2. *Microhyla usta usta* Cope, U.S.N.M. No. 24965 (type, Proc. Acad. Nat. Sci. Philadelphia, vol. 18, 1866, p. 131).

3. *Phyllodactylus* cf. *lanei* Smith (reported by Cope, Bull. U. S. Natl. Mus. no. 32, 1887, p. 28, as *P. tuberculosus;* specimen not now in U.S.N.M.).

4. *Thecadactylus rapicaudus* Houttuyn, U.S.N.M. Nos. 24916, 24917.

5. *Anolis nebulosus* Wiegmann, U.S.N.M. Nos. 24918–24921.

6. *Ctenosaura pectinata* Wiegmann, U.S.N.M. Nos. 24922, 24923.

7. *Sceloporus horridus oligoporus* Cope, U.S.N.M. No. 24924.

8. *Sceloporus melanorhinus calligaster* Smith, U.S.N.M. Nos. 24925, 24926.

9. *Sceloporus pyrocephalus* Cope, U.S.N.M. Nos. 24927–24935.

10. *Cnemidophorus communis communis* Cope, U.S.N.M. Nos. 24941–24960 (cotypes, Proc. Amer. Phil. Soc., vol. 17, 1877, p. 95).

11. *Cnemidophorus deppei lineatissimus* Cope, U.S.N.M. Nos. 24937–24940 (cotypes, Proc. Amer. Phil. Soc., vol. 17, 1877, p. 94).

12. *Clelia clelia immaculata* Smith, U.S.N.M. No. 24966 (type, Proc. U. S. Natl. Mus., vol. 92, 1942, p. 394).

13. *Coniophanes lateritius lateritius* Cope, U.S.N.M. No. 6093 (type, missing, Proc. Acad. Nat. Sci. Philadelphia, vol. 13 "1861" [1862], p. 524).

14. *Conophis vittatus vittatus* Peters, U.S.N.M. No. 29123 (cotype of *Conophis sumichrasti sumichrasti* Cope, Jour. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 8, 1876, p. 137).

15. *Imantodes latistratus* Cope, U.S.N.M. No. 24963 (cotype, Bull. U. S. Natl. Mus., no. 32, 1887, p. 68).

16. *Lampropeltis triangulum nelsoni* Blanchard, U.S.N.M. Nos. 24967, 24968 (paratypes, Occas. Papers Mus. Zool. Univ. Michigan, no. 81, 1920, pp. 6–8).

17. *Leptodeira maculata* Hallowell, U.S.N.M. No. 24962.

18. *Masticophis* cf. *lineatus* Bocourt (reported by Cope, Bull. U. S. Natl. Mus., no. 32, 1887, p. 71, as *Bascanium flagelliforme testaceum;* specimen not now in U.S.N.M.).

19. *Pseudoficimia frontalis* Cope, U.S.N.M. No. 24961.

20. *Sympholis lippiens* Cope, U.S.N.M. Nos. 31345, 31346 (cotypes, Proc. Acad. Nat. Sci. Philadelphia, vol. 13, "1861" [1862], p. 524; also listed is U.S.N.M. No. 6092, missing).

21. *Tantilla calamarina* Cope, U.S.N.M. No. 6600 (type, Proc. Acad. Nat. Sci. Philadelphia, 1866, p. 320).

22. *Trimorphodon tau upsilon* Cope, U.S.N.M. No. 31358 (type, Proc. Amer. Phil. Soc., vol. 11, 1869, pp. 151–152).

23. *Agkistrodon bilineatus* Günther (reported by Cope, Proc. Acad. Nat. Sci. Philadelphia, 1865, p. 191; specimen not in U.S.N.M.).

SPECIES KNOWN FROM GUADALAJARA

Among the 23 species of reptiles and amphibians sent by J. J. Major from Guadalajara, eight are known to occur there or within a few miles of the city. These are listed and noted below:

Microhyla usta usta: This species is found on both east and west coasts of Mexico, and is known from the immediate vicinity of Guadalajara from specimens in addition to the type specimen collected by Major.

Anolis nebulosus: This species has been recorded from Guadalajara, though the specific identification of any *Anolis* of western Mexico is open to question.

Ctenosaura pectinata: There are specimens (U.S.N.M. Nos. 18967, 18970, 19032) from Barranca Ibarra, "about half a day's journey north of the city [Guadalajara]" (Jouy, 1894, p. 772). The species is widely distributed from central Sinaloa to Tehuantepec.

Sceloporus horridus oligoporus: The presence of this subspecies at Guadalajara, as well as to the north and south, is well established. In western Jalisco and Nayarit it is replaced by *S. h. albiventris* (see Smith, 1939, pp. 106–110, fig. 11).

Lampropeltis triangulum nelsoni: This species is found from the coastal region eastward to and beyond Guadalajara.

Leptodeira maculata: The specimen assigned to this species by Smith (1943, p. 440), U.S.N.M. No. 24962, is a juvenile with both head and tail missing. Although there are no other records for Guadalajara, the species is known from Ocotlán on Lake Chapala as well as from localities to the west and southwest of Guadalajara. There are a num-

ber of records for the coastal region from Colima to Sinaloa (Duellman, 1958a, pp. 56–57).

Masticophis lineatus: A specimen reported by Cope as *Bascanium flagelliforme testaceum* may represent this species, but this cannot be verified as the specimen apparently is no longer in existence. *Masticophis lineatus* is a common species around Guadalajara as well as in the coastal lowlands.

Trimorphodon tau upsilon: The presence of *T. t. upsilon* at and near Guadalajara is verified by specimens in addition to those collected by Major. This is the only species collected by Major that is not known from the Pacific coastal region. It is found around the periphery of the Mexican Plateau, from Sonora to Tamaulipas.

SPECIES NOT KNOWN FROM GUADALAJARA

The species unknown in the immediate region but represented by specimens sent by Major from Guadalajara are the following:

Hyla (Smilisca) baudini: This is a common frog in the coastal and barranca regions of western Mexico, occurring at altitudes of 3000 feet around Tepic, Nayarit, but not taken inland so far as Guadalajara.

Phyllodactylus lanei: The locality for this species closest to Guadalajara is Hostotipaquillo and vicinity (A.M.N.H. Nos. 19298–19300), about 50 miles west-northwest of Guadalajara. It is a common species in the coastal region from Sinaloa to Guerrero.

Thecadactylus rapicaudus: The presence of this gecko in the "Guadalajara" collection may be dismissed as almost certainly resulting from some confusion of data. The species is Central American and enters Mexico only in Yucatan.

Sceloporus melanorhinus calligaster: Smith (1939, p. 87) remarks: "The specimens which are stated to have been collected at Guadalajara are almost certainly incorrectly labeled. So far as I am aware, the species does not occur at elevations so great as that at Guadalajara (5,000 feet)." The localities of record closest to Guadalajara are in Colima and southern Nayarit, more than 100 miles from Guadalajara.

Sceloporus pyrocephalus: There are no published records for this species in Jalisco other than the specimens collected by Major, but there are several localities recorded in Colima, where Oliver (1937, p. 11) found it "to be common from sea level to an elevation of 3500 feet. No specimens were collected above this level."

Cnemidophorus communis communis: The distribution and variation of this species are discussed by Zweifel (1959). The species occurs

no closer to Guadalajara than Colima, approximately 100 miles to the south.

Cnemidophorus deppei lineatissimus: This species appears to be similar to the preceding in that it inhabits the coastal region and does not range inland so far as Guadalajara. There is, however, a specimen (A.M.N.H. No. 74905) labeled "Chapala," a town less than 30 miles south-southeast of Guadalajara. I believe the "Chapala" record needs verification, and the record for Guadalajara is almost certainly erroneous.

Clelia clelia immaculata Smith: This snake is known from only two specimens, the type collected by Major and another from Paso del Río, Colima (Smith, 1942). These are the only two records for the species in western Mexico. Elsewhere, it ranges from Veracruz and Oaxaca to South America.

Coniophanes lateritius lateritius: Only four specimens of this species are known, and only three are extant.[1] Smith and Grant (1958) assign two of these (from Puebla and Guerrero) to *C. l. melanocephalus.* The remaining two specimens are the type collected by Major (apparently now lost) and one from Puerto Vallarta on the coast of Jalisco. Smith and Grant remark that "In view of the relatively low elevation and mesic environment occurring at Puerto Vallarta we suspect that the type, labelled 'Guadalajara,' did not come from the semi-xeric highlands where the city itself is located, but from some nearby area more in keeping with the environment of Puerto Vallarta."

Conophis vittatus vittatus: Smith and Taylor (1945, p. 44) give the range of this species as from "Nayarit south into Oaxaca." I find no specific localities published for Nayarit or Jalisco (other than Guadalajara), but there are several for Colima and western Michoacán.

Imantodes latistratus: Currently, three species of *Imantodes* are recognized in western Mexico. However, a study in preparation for publication (Zweifel, MS) indicates that only a single polytypic species is present. The nearest to Guadalajara that *Imantodes* has been found is southwestern Jalisco, about 65 miles from Guadalajara. The specimen obtained by Major resembles this Jalisco specimen more closely than it does specimens from Colima or Nayarit.

Pseudoficimia frontalis: This species has been taken at a few scattered localities along the Pacific coast and in the coastal mountain ranges from Sinaloa to Colima, and ranges inland in the basin of the

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[1] Since this was written, an additional specimen from Nayarit has become available and will be reported in a forthcoming paper.

Río Balsas. It has been found no closer to Guadalajara than Colima, 100 miles to the south.

Sympholis lippiens: Sympholis is rarely collected. It has been reported from only three localities in addition to Guadalajara: Tepic and 16.8 miles east of San Blas in Nayarit, and from 4 miles north of Culiacán, Sinaloa.

Tantilla calamarina: Peters (1954, pp. 31–32) points out "that the record of Guadalajara for the type of *calamarina* is from a specimen collected by I. I. [J. J.] Major and sent to the Smithsonian Institution and that a large number of the species described from Major's collection are now known to be Pacific coastal forms which have never been retaken at Guadalajara." Verifiable records closest to Guadalajara are in Colima.

Agkistrodon bilineatus: Records closest to Guadalajara are about 100 miles to the southeast in Michoacán. The species is found in the coastal reigon as far north as southern Sonora.

DISCUSSION

Of 22 species in the list of those collected by Major,[1] eight are known or suspected to occur at or near Guadalajara. The remaining 14 species have been found no closer to Guadalajara than 50 to 100 miles. Of the eight that occur at Guadalajara, only one, *Trimorphodon tau upsilon,* is not found on the coast. The impression one gains is that the fauna sampled was that of the coast or coastal foothills, with a few specimens possibly taken on the plateau. This impression is considerably reënforced when the absence from the collection of many species known to occur at Guadalajara is noted.

It may reasonably be argued that species not at present known from the vicinity of Guadalajara may yet be found in moist barrancas (see Goldman's [1951, p. 170] description of Barranca Ibarra, for example) nearby. In this respect, two of Major's species assume importance.

Sceloporus pyrocephalus is closely related to *S. nelsoni,* and the two seem to have complementary ranges. *Sceloporus nelsoni* is found in the Barranca Ibarra north of Guadalajara, but *S. pyrocephalus* is recorded no closer to Guadalajara than Colima. It seems unlikely that an undetected population of *pyrocephalus* exists with its relative *nelsoni* near Guadalajara. *Cnemidophorus communis* occurs in the coastal region of southwestern Jalisco and in Colima. Guadalajara itself is within the

[1] *Thecadactylus rapicaudus* is omitted from consideration, as the species can scarcely be native to western Mexico.

range of *Cnemidophorus scalaris*, which meets *C. sacki* within a very few miles of the city (Zweifel, 1959). There is little likelihood that *C. communis* occurs with either of these two species in the vicinity of Guadalajara.

Sceloporus pyrocephalus and *Cnemidophorus communis* seemingly provide evidence that the lowland element in the collection was not obtained in the barranca region near Guadalajara, but more probably on or near the coast.

There are elements in the collection suggesting that the collection may have been made to the south of Guadalajara, rather than to the west in Nayarit or in the north coastal portion of Jalisco. *Sceloporus horridus oligoporus*, found in Colima, is in the collection, rather than *S. h. albiventris*, the subspecies of Nayarit and north coastal Jalisco. The subspecies of *Cnemidophorus deppei* represented is not *C. d. duodecemlineatus* of southern Nayarit, but *C. d. lineatissimus* of coastal Jalisco and Colima southward to Guerrero. One species, *Sympholis lippiens*, is not known south of Nayarit. However, this species is so rare in collections that the absence of more southerly records cannot be regarded as significant.

With the possible exception of *Trimorphodon tau upsilon*, all species represented in the collection are known or expected in Colima (see Duellman, 1958b, for an up-to-date state list). A list of species similar to Major's might be accumulated in the southern coastal portion of Jalisco or north coastal Michoacán, but these regions are seldom visited even today. It seems more probable that the State of Colima may have been the source of most of Major's specimens, possibly with a few specimens added from the locality from which the collection was shipped, or taken en route to that locality.

I do not propose a blanket revision of type localities, even though present information points to Colima as the source of much of Major's collection. I believe that revisions of type localities should be handled individually in revisions of the species concerned. I do wish to point out that of the 10 forms described from "Guadalajara," only two, *Microhyla usta usta* and *Trimorphodon tau upsilon*, are reasonably well established as occurring there. The rest almost certainly do not occur at Guadalajara.

The foregoing analysis is made on the premise that Major made his collections at only a few localities. It is, of course, possible that he assembled material from several localities, but this cannot be inferred from what we know at present of the distributions of the species represented.

SUMMARY

A review of the known distributions of 23 species of reptiles and amphibians collected by J. J. Major supposedly at Guadalajara, Jalisco, indicates that the majority of the specimens came from a locality or localities on or near the coast, the State of Colima being the most likely source. Only eight of the species are known to occur at or near Guadalajara, and seven of these also occur in the coastal region. Guadalajara may be acceptable as a type locality for two species, *Microhyla usta usta* and *Trimorphodon tau upsilon*, but detailed studies of other species represented in Major's collection will reveal the need for designating new type localities.

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