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A REVISION OF THE HERPETOFaUNA OF COLIMA, MEXICO

UNA REVISIÓN DE LA HERPETOFaUNA DE COLIMA, MÉXICO

JACOBO REYES-VELASCO^{1,3*}, CHRISTOPH I. GRÜNWALD^{1,2,4}, JASON M. JONES^{1,2} & IVÁN AHUMADA-CARRILLO^{1,2}

¹Herp.mx A.C. – Villa de Álvarez, Colima, México.

²Biodiversa A.C. – Chapala, Jalisco, México.

³Entorno Biótico A.C. – Villa de Álvarez, Colima, México.

⁴Biencom Real Estate – Ajijic, Jalisco, México.

*Correspondence: jrv305@nyu.edu

Resumen.— La herpetofauna de Colima ha recibido poca atención hasta años recientes. Algunos listados estatales y varias tesis sin publicar son algunas de las pocas referencias disponibles para la herpetofauna del estado. Lemos-Espinal et al. (2020) publicaron una revisión de la herpetofauna del estado. Desafortunadamente esta revisión fue publicada con numerosos errores y omisiones. Aquí revisamos todos los listados publicados referente a la herpetofauna de Colima, incluyendo dos tesis sin publicar relacionadas a la herpetofauna de este estado, así como registros disponibles en bases de datos electrónicas (GBIF, Vertnet). Examinamos ejemplares de museos de taxa reportados para el estado y mostramos que muchas de las especies reportadas están basadas en identificaciones incorrectas, y que otras especies que ya eran conocidas para el estado fueron ignoradas en el listado más reciente. Adicionalmente, reportamos seis nuevas especies de anfibios y reptiles para el estado. Basados en nuestra revisión, la herpetofauna del estado de Colima consiste de 148 especies, de las cuales 40 son anfibios y 112 son reptiles, con cinco especies introducidas. También hacemos referencia a otras especies de posible ocurrencia en el estado. Recomendamos la revisión de muchos de los listados herpetofaunísticos para varios de los estados de México para corregir múltiples errores.

Palabras clave.— Anfibios, herpetofauna, occidente de México, reptiles.

Abstract.— Until recently, the herpetofauna of Colima has received relatively little attention. A few state lists and several unpublished dissertations are the only references available for the herpetofauna of the state. Recently, a revised herpetofaunal state list was published by Lemos-Espinal et al. (2020). Unfortunately, that revision includes a significant number of errors and omissions. Herein, we reviewed all published accounts on the herpetofauna of Colima including two unpublished thesis related to the herpetofauna of the state, and records available in online databases (GBIF, Vertnet). We examined museum specimens of previously published taxa and show that many of the species reported for the state are in fact misidentifications, and that other species already known for the state were overlooked in the most recent state checklist. Additionally, we report on ten species of amphibians and reptiles that are new records for the state. Based on our revision, the herpetofauna of Colima consists of 152 species, of which 112 are reptiles and 40 are amphibians, with five introduced species. We also comment on species of possible occurrence in the state. We recommend that other state lists which have been published for Mexico be revised in order to correct a variety of issues and information.

Keywords.— Amphibians, herpetofauna, reptiles, west of Mexico.

INTRODUCTION

Checklists of amphibians and reptiles are very useful in the biological sciences, as they are considered by government agencies, conservation organizations, and researchers as one of the first resources to assess the biodiversity of amphibians

and reptiles in a particular area. Government agencies depend on these checklists to design conservation plans and regulate the issuing of collecting permits, request environmental restoration plans from mining companies and other industries, and for the development of natural protected areas (Reyes-Velasco pers. obs.). Researchers use these checklists to plan

fieldwork related to particular regions or organisms, and even hobbyists rely on checklists to plan their ecotourism endeavors. A properly prepared state checklist is a useful resource for the whole community. However, in recent years we perceive that the publication of herpetological checklists for different states and regions of Mexico has been done without proper care when publishing those lists. Recently, published herpetofaunal checklists now cover more than 80% of the states of Mexico (Reyes-Velasco & Ramírez-Chaparro, 2019); however, many of them have major errors and omissions that make them not only non-useful, but actually detrimental for the development of research and conservation (Reyes-Velasco & Ramírez-Chaparro, 2019).

Lemos-Espinal et al. (2020) recently published a checklist for the amphibians and reptiles of the state of Colima, located on the west coast of Mexico (Fig. 1). Their published list contains numerous errors, with more than 20% of the taxa listed to be incorrect, and several taxa are not listed at all. The majority of these records were compiled from online databases such as Vertnet (www.vertnet.org) and GBIF (www.gbif.org), however databases such as Vertnet or GBIF are a great resource for gathering important distribution information; however, they also have their limitations. Curators at the institutions that provide records for such databases don't have the time or resources to double check the identification for every single specimen housed in their collections; consequently, scholars must be careful when reporting data from these databases without performing the species identification themselves (Reyes-Velasco & Ramírez-Chaparro, 2019). Due to the extent of errors and omissions published by Lemos-Espinal et al. (2020), we chose to write a follow-up publication addressing those issues, those in other articles, as well as new state records and taxonomic arrangements related to the herpetofauna of Colima.

MATERIALS AND METHODS

We focused mainly on those taxa reported by Lemos-Espinal et al. (2020), but also comment on state lists published by Duellman (1958), Smith & Smith (1976a; 1976b), as well as the unpublished dissertations of Painter (1976) and Martínez-Ortega (2005). Loeza-Corichi (2004) Master's dissertation on the herpetofauna of the Cerro Grande region of Jalisco and Colima does not list specimen numbers or specific localities for the species reported; therefore, we do not discuss that work here. We also report on errors found in online databases. We list museum collection numbers of specimens examined throughout the text, and we use Museum Abbreviations as listed on Vertnet and GBIF.

We have conducted herpetofaunal surveys in the state of Colima between 2003 and 2020 and have published numerous articles related to the herpetofauna of the state including multiple state records (Ahumada-Carrillo et al., 2014; Reyes-Velasco et al., 2012; Reyes-Velasco et al., 2009), rediscoveries of presumably extinct species (Reyes-Velasco et al., 2010), revision of taxa with taxonomic issues (Reyes-Velasco & Mulcahy, 2010), as well as new species for the state (Bryson et al., 2014; Grünwald et al., 2018; Reyes-Velasco et al., 2015).

The revisions that we report here are based on our own fieldwork experience in the state, as well as the examination of museum material housed at different natural history collections, which are listed under each species. In the case of museum specimens, the majority of the determinations are based on high quality photographs of the specimens, provided by the curators of each museum at our request. Our goal is to report on all the possible errors and omissions in previous herpetofaunal lists for Colima, as well as to list all the species that have not previously been reported for the state, but could potentially occur there (and the reasons for their likely presence). We focus primarily on errors regarding identifications or/and locality, but do not go into detail on taxonomic issues. Our species list is based on the currently accepted taxonomy which is published online on the Amphibian Species of the World database (<http://research.amnh.org>) for Amphibians (with the exception of the genus *Rana* over *Lithobates*) and the Reptile Database (reptile-database.org) for Reptiles. We do not include subspecies at this time.

RESULTS

List of errors on the taxa reported for the herpetofauna of Colima

Here, we list errors published in previous state lists for the state of Colima. The majority of these errors are based on misidentifications or erroneous locality information; however, we have also included instances in which some species were mistakenly omitted. In the majority of cases, we were able to examine the specimens in question; however, we noted the few exceptions where this was not possible.

AMPHIBIANS

Anura

Family Bufonidae

Incilus gemmifer – This species was listed for the state of Colima by Martínez-Ortega (2005), but he did not reference

any specimens. Porter (1964) examined two individuals referred to this species (AMNH 63895–96), which were collected 2 mi (3.2 km) south of Cihuatlán, Jalisco, in the state of Colima, and determined them to be *Incilius mazatlanensis*. It is unlikely that *Incilius gemmifer* occurs in Colima.

Incilius valliceps – A single specimen of this species is listed on GBIF as collected at Comala, Colima (CNAR AR6371). However, *I. valliceps* is restricted to the Atlantic versant of Mexico (Mendelson III et al., 2011), and this specimen most likely represents the closely related *I. mazatlanensis* which is common at that locality (*pers. obs.*).

Family Craugastoridae

Craugastor augusti – Lemos-Espinal et al. (2020) reported this species as likely to occur in Colima; however, there are multiple records of this species from Colima which have already been published (e.g., Streicher et al., 2014).

Craugastor mexicanus – A single specimen of this species is listed on Vertnet (MCZ A-22487), collected by J. A. Oliver at Hacienda Paso del Rio, Periquillo, Colima in 1935. However, this species is restricted to the Atlantic versant of Mexico (Streicher, 2012). This record most likely represent *Craugastor occidentalis*, which is known to be common in the state and is also known from that locality (*pers. obs.*).

Craugastor pygmaeus – This species was reported as likely to occur in Colima by Lemos-Espinal et al. (2020). Grünwald et al. (2016) reported specimens of this species from the state of Colima. However, Streicher (2012) showed that this species is restricted to southeastern Mexico, so it is very unlikely for this species to occur in the state, and specimens of *C. pygmaeus* from Colima represent either *Craugastor hobartsmithi* or an undescribed species related to *C. pygmaeus*.

Family Eleutherodactylidae

Eleutherodactylus nitidus – The specimens of this species reported by Lemos-Espinal et al. (2020) from Colima are actually *E. orarius*, based on the most recent revision of the group (Grünwald et al., 2018). *Eleutherodactylus nitidus* is restricted to central and southern Mexico, in the states of Guerrero, México, Morelos, Oaxaca, Puebla and Tlaxcala (Grünwald et al., 2018).

Eleutherodactylus pallidus – A single specimen for this species is listed on Vertnet, however this record pertains to an individual

of *E. modestus* (CAS 97122); therefore, *E. pallidus* is not found in Colima (Grünwald et al., 2018).

***Eleutherodactylus nivicolimae* (= *Eleutherodactylus rufescens*)** – Reyes-Velasco et al. (2009) reported *E. nivicolimae* for the Sierra de Manantlán in Colima. This species was later synonymized with *E. rufescens* by Grünwald et al. (2018), who described the individuals from the Sierra de Manantlán as *Eleutherodactylus manantlanensis*. Lemos-Espinal et al. (2020) lists *Eleutherodactylus rufescens* (= *E. nivicolimae*) for Colima; however, the specimen they list (USNM 161162) actually represents one of the type specimens of *E. nivicolimae*, and was collected 5 mi (8 km) W of Atenquique, Nevado de Colima, in the state of Jalisco. Thus, *E. rufescens* had not been collected in the state of Colima; however, below we report on the first specimens collected in the state.

Family Hylidae

Exerodonta sumichrasti – Lemos-Espinal (2020) reports this taxon for Colima, however this species is restricted to the Pacific Versant of southern Mexico in the states of Guerrero, Oaxaca, and Chiapas (Mendelson & Campbell, 1994). The specimen purportedly collected in Colima (USNM 57518) in fact represents *Exerodonta smaragdina*, which is common at moderate elevations across the state (Reyes-Velasco et al., 2009).

Sarcohyla bistincta – Lemos-Espinal et al. (2020) lists this species as of possible occurrence in Colima; however, this species is restricted to southern and eastern Mexico (Campbell et al. 2018). The recently described *Sarcohyla hapsa* Campbell et al. (2018) should be considered of possible occurrence in Colima, particularly in the area around the Volcán de Colima and perhaps in the Sierra de Manantlán, but not throughout the state as reported by Lemos-Espinal et al. (2020).

Family Ranidae

Rana catesbeiana – Lemos-Espinal et al. (2020) reported this species for Colima based on a single farm that was breeding this species. The farm that housed these frogs recently closed and all frogs were euthanized (*pers. obs.*). The frog farm was located in the municipality of Coquimatlán (19.1404°N, 104.0164°W). This species is not known to have established populations anywhere in the state, and consequently should not be considered a member of the herpetofauna of Colima. However, because of the possibility of some individuals escaping the farm and establishing a breeding population, we have included *R. catesbeiana* in our list of species of possible occurrence.

Rana berlandieri – Lemos-Espinal et al. (2020) reported this species for Colima; however, individuals of this species reported for Colima in fact represent *Rana forreri* and *R. neovolcanica*, which were previously considered *R. berlandieri* (Hillis et al., 1983). *Rana berlandieri* occurs on the Atlantic versant of the southern United States and eastern Mexico (Platz, 1991), and should not be considered a species of possible occurrence in Colima.

Rana forreri – Lemos-Espinal et al. (2020) reported this species for the state; however, both Hillis et al. (1983) and Zaldívar-Riverón et al. (2004) showed that the use of the name *Rana forreri* should be restricted to populations from southern Sonora to northern Jalisco, while the population in Colima in fact represents a different and yet undescribed species. Here we refer to this species as *Rana af. forreri*.

Rana pipiens – Painter (1976) reported multiple specimens of this species from Colima; however, these records are based on individuals of *R. af. forreri* (Hillis et al., 1983). *Rana pipiens* is restricted to the USA and Canada (Hillis et al., 1983).

Rana psilonota – Lemos-Espinal et al. (2020) reported this species as of possible occurrence for the state; however, Webb (2001) listed a specimen from El Cobano, Colima (UTEP 1228-31) in his original description of the species.

Rana sinaloae – Duellman (1958) reported this species for the state of Colima (UMMZ 115567); however, this is a junior synonym for *R. pustulosa* (Hillis et al., 1984).

Family Scaphiopodidae

Spea hammondi – Martínez-Ortega (2005) listed this species for the state, but provides no locality data. This record is probably based on misidentification of individuals of *Spea multiplicata* as discussed below.

Spea multiplicata – The only specimen from the state (TNHC 19343) reported by Lemos-Espinal et al. (2020) was supposed to have been collected by W. Porter in Tecolapa, municipality of Tecomán, which is located in tropical deciduous forest, a vegetation type that is unsuitable for *Spea multiplicata*. However, all other records collected by W. Porter on the same date are from San Luis Soyatlán, at Lake Chapala, Jalisco, where *Spea multiplicata* is common. Therefore, it is more likely that the specimen in question was collected there, and later mistakenly labeled with the locality from the previous day on the coast of Colima. It is possible that *S. multiplicata* does occur in Colima,

but on the slopes of the Volcán de Colima, and consequently, this species should be considered of possible occurrence. A record from the town of Quesería, in the slopes of the Volcán de Colima (CNAR AR5481) probably does represent this species; however, we were not able to examine that specimen.

Caudata

Family Ambystomatidae

Ambystoma velasci – The only specimen (MNHN RA 1868.175) reported for the state of Colima by Lemos-Espinal et al. (2020) has questionable locality data as it is likely not from this state (*pers. obs.*). However, this species was first reported for the state by Painter (1976), and published by Reyes-Velasco et al. (2009).

Ambystoma dumerilii – An individual of this species (HE 546) in the collection of Alfredo Dugès has the label “Colima” (Flores-Villela et al., 2016), conspicuously absent from the original description of this species by Dugès (1870). This locality is most likely in error as the species is thought to be restricted to Lake Pátzcuaro, Michoacán (Brandon, 1992).

Family Plethodontidae

Pseudoeurycea leprosa – This species was reported as likely to occur in Colima by Lemos-Espinal et al. (2020). However, it is restricted to the Mexican Transverse Ranges in eastern Mexico, from central Estado de México to southern Puebla (Lynch et al., 1983). This species should not be considered as of possible occurrence in Colima.

REPTILIA

Squamata

Lacertilia

Family Corytophanidae

Laemancus longipes – Lemos-Espinal et al. (2020) lists this species for Colima based on a single specimen (FMNH 1353). Multiple authors have previously questioned the validity of this locality for this species (Duellman, 1958; McCoy, 1968). It is very unlikely that this species occurs in Colima, as its known distribution is restricted to southeastern México and Central America (McCranie & Köhler, 2004); therefore, this species should not be considered as part of the herpetofauna of Colima.

Family Dactyloidae

Anolis nebuloides – Martínez-Ortega (2005) reported this species for the state; however, the only voucherized specimens of this species collected in Colima (UMMZ 80058–64; TNHC 110378) actually represent *A. nebulosus*. *Anolis nebuloides* is restricted to the Mexican state of Oaxaca (Köhler et al., 2014), and should not be considered a species of possible occurrence for Colima.

Family Iguanidae

Dipsosaurus dorsalis – Two specimens of this species (AMNH 125-126) are reported from the state by Painter (1976). However, the locality for these specimens is listed as “Mt. Colima”, and likely refers to a desert locality by that name. The southernmost locality for this species is hundreds of kilometers north at Topolobampo, Sinaloa (Bezy et al., 2017), and this species should not be considered as part of the herpetofauna of Colima.

Family Phrynosomatidae

Phrynosoma orbiculare – The only specimens from the state reported by Lemos-Espinal et al. (2020), MNHN RA-1654A-B, are the type series of *Tapaya orbiculare dugesii* Duméril & Bocourt 1870. However, the locality of these specimens and the occurrence of *P. orbiculare* in Colima has been questioned by various authors (Horowitz, 1955; Montanucci, 1979). The closest records of this species are from the Sierra Madre Occidental north of Guadalajara (AMNH 537), so it is very unlikely that this species occurs in Colima. Historically, many specimens of amphibians and reptiles were collected elsewhere and then shipped abroad from Colima, which has caused confusion regarding collecting localities for many species (Duellman, 1958). This species should not be considered as part of the herpetofauna of the state.

Sceloporus asper – Painter (1976) reported this species for the state based on a single specimen (UMMZ 130924) from El Cobano, Cuahutémoc, Colima. However, the reported locality for this specimen is in error as it was actually collected on May 30, 1964 in the state of Michoacán, 2 mi 3.2 km) E of Volcán Paricutín, according to the original field catalogue of K. Adler. Lemos-Espinal et al. (2020) does not list this species for the state; however, Pérez-Ramos and Saldaña-de La Riva (2008) reported on a specimen of *S. asper* (MZFC-RBSM R-251) collected at El Terrero, Cerro Grande, Colima (Fig. 1).

Herein, we report on a second specimen of this species from the opposite end of the state, in the Volcán de Colima. The full locality is: Mexico, Colima, Municipality of Cuahutémoc,

Montitlán (19.4023° N, 103.6171° W); 1450 m of elevation; April 8, 2020. It was found on the trunk of a tree; photographed by Jacobo Reyes-Velasco; the photographs were deposited at University of Texas at Arlington Digital Collection, UTADC 9584. Verified by Eric N. Smith.

Sceloporus dugesii – Lemos-Espinal et al. (2020) reported this species for Colima based on individuals housed at the Angelo State Natural History Collection (13801) collected in 1969 2 miles (3.2 km) south of Tonila, Jalisco, but in the state of Colima. Lemos-Espinal et al. claim that this is the oldest record for this species in Colima; however, they disregard the fact that the type locality for the species is in fact Colima, and the species was described in 1874 by Bocourt.

However, just as with *Phrynosoma orbiculare dugesii*, it is possible that the type locality reported by Bocourt is in error. We have not been able to examine the type series or the individuals housed at the Angelo State Natural History Collection, and we considered the occurrence of this species in Colima as possible but not confirmed.

Sceloporus grammicus – Lemos-Espinal et al. (2020) reported this species as likely to occur in Colima. Recently, this species was collected in the foothills of the Volcán de Colima (Montaño-Ruvalcaba et al., *in press*).

Sceloporus hunsakeri – A single specimen supposedly representing this species is listed on Vertnet (LACM 97340), from 12 mi (19.3 km) SW of Pihuamo, Jalisco. This individual is actually a *Sceloporus pyrocephalus* (*pers. obs.*). *Sceloporus hunsakeri* is endemic to the southern tip of the Baja California peninsula, and should not be considered a member of the herpetofauna of Colima.

Sceloporus nelsoni – Lemos-Espinal et al. (2020) reported this species for the state; however, this species does not occur in Colima, as it is restricted to northwestern Mexico (Smith, 1939). Previous records of *S. nelsoni* from Colima are based on specimens of *S. pyrocephalus* (Smith 1939). This species should not be considered part of the herpetofauna of the state.

Sceloporus torquatus – Lemos-Espinal et al. (2020) reported this species for the state based on a single specimen deposited in the Paris Museum (MNHN RA 0.2922); however, the range of this species is restricted to central and northern Mexico (Smith, 1936). The specimen from Colima is likely *S. bulleri*, and this species should be considered a species of possible occurrence until positively verified from the state.

Sceloporus spinosus – Painter (1976) reported this species for the state based on two specimens (AMNH 15510-11) from Villa de Álvarez, Colima. However, it is more likely that these specimens actually represent *Sceloporus melanorhinus*, which is common in Colima, and not *S. spinosus*, which is restricted to Central Mexico (Smith, 1939), however we were not able to examine these specimen.

Sceloporus variabilis – A single specimen supposedly of this species is listed on Vertnet (CAS 132191), from Manzanillo, Colima. However this species is endemic to eastern Mexico (Smith, 1939), and this record likely refers to *Sceloporus utiformis*. We were not able examine this specimen for proper identification.

Family Phyllodactylidae

Phyllodactylus lanei – Lemos-Espinal et al. (2020) list this species for Colima, however, Ramírez-Reyes and Flores-Villela (2018) elevated the subspecies of *P. lanei* to the species level, of which *P. lanei rupinus* occur in the state. Additionally, Ramírez-Reyes and Flores-Villela (2018) described *P. benedettii* from Jalisco, and it is likely to occur in Colima. Ramírez-Reyes and Flores-Villela (2018) did not examined samples from Colima, so we suggest to consider *P. lanei* as possibly occurring in Colima until specimens are examined in order to determine their taxonomic identity, while *P. rupinus* is found in the state.

Phyllodactylus tuberculosus – Lemos-Espinal et al. (2020) reported this species for the state based on a single specimen deposited in the Paris Museum (MNHN RA 0.1657). This record most likely represents an individual of *P. rupinus*, which is part of the *P. tuberculosus* group (Dixon, 1964). *Phyllodactylus tuberculosus* is a wide ranging species across Mexico and central America, however no records exist in the coastal areas of Jalisco, Colima and Michoacán (Dixon, 1964). This species should be considered as of possible occurrence in the state until a specimen is positively identified as *P. tuberculosus*.

Family Scincidae

Plestiodon indubitus – Feria-Ortiz et al. (2011) and Bryson et al. (2017) showed that *Plestiodon indubitus* is restricted to central Mexico, while the population referred to this species from the Volcan de Colima complex in fact represents a different and yet undescribed species. The population from the Sierra de Manantlán can also be referred to the same undescribed species (C. Pavón, pers. comm.). Therefore we refer to this species as *Plestiodon af. indubitus*.

Family Sphaerodactylidae

Sphaerodactylus molei – Painter (1976) reported multiple specimens for Colima (AMNH 15616-21). However, this species is restricted to a few Caribbean islands and northern South America, and no additional specimens from Colima have been reported. It is likely that these records are in error, and in our opinion additional evidence is required to support the species' presence in the state.

Family Teiidae

Aspidoscelis costatus – The specimen of *A. costatus* listed for Colima (USNM 31610) by Lemos-Espinal et al. (2020) is in fact correctly identified in the collection as an individual of *A. communis*. It is still possible that this species does occur in Colima; however, currently no specimens are known (Duellman & Zweifel, 1962), and therefore, it should be considered a species of possible occurrence.

Aspidoscelis deppii – Lemos-Espinal et al. (2020) listed this species for Colima based on a single specimen (UAZ 06297) which was collected at “64.0 mi (103 km) E Colima, in the state of Jalisco”. This species is known from Michoacán to Central America (Duellman & Wellman, 1960), and has not been found in Colima. However, it should be considered a species of possible occurrence (see below).

Aspidoscelis gularis – This species was reported by Martínez-Ortega (2005) for Colima, but he did not list any specimens. Multiple specimens for this species are reported in Vertnet; however, they represent *A. communis* (pers. obs.). *Aspidoscelis gularis* is restricted to central México, and therefore, it should be considered a species of possible occurrence in the state of Colima.

Aspidoscelis guttatus – This species was reported for Colima by Lemos-Espinal et al. (2020) and Duellman (1958). However, these reports are based on a large individual of *A. lineattissimus* (ASNHC 13965) (pers. obs.). *Aspidoscelis guttatus* is restricted to southeastern Mexico and Central America (Kohler, 2000) and it should not be included as a part of the herpetofauna of Colima.

Aspidoscelis sacki – Duellman (1958) and Martínez-Ortega (2005) reported this species for the state. Multiple individuals appear on Vertnet as having been collected from the state; however, they represent individuals of *A. communis*, which at some point was considered a subspecies of *A. sacki* (Smith & Taylor, 1950). Unfortunately, some museum collections have

not updated the taxonomy associated with these specimens. *Aspidoscelis sacki* is restricted to the Balsas Basin of Guerrero, Puebla, and Oaxaca (Barley et al., 2019) and therefore, it should not be included as a part of the herpetofauna of Colima.

Serpentes

Family Colubridae

Geagras redimitus – Lemos-Espinal et al. (2020) and Smith (1976a) reported this species for Colima based on a single specimen (MVZ 75805). However, historically this species has been confused with *Tantilla calamarina* and the relationship between the two species remains unclear (Holm, 2008). Specimens assignable to this species are limited to the coast of Oaxaca (Wilson, 1988). More proximate records on the coast of Michoacán (UMMZ 114446-7) reported by Duellman (1961) in fact represent *Tantilla calamarina*. We recommend considering the occurrence of this species in Colima as doubtful until molecular work can be done in this group.

Masticophis flagellum – Martínez-Ortega (2005) list this species for the state, but provides no locality data. Old records of this species likely represent *Masticophis lineatus* (= *M. mentovarius striolatus*), as *M. flagellum* is restricted to northern Mexico. This species should not be considered part of the herpetofauna of Colima. See account on *Masticophis mentovarius striolatus* below.

Masticophis mentovarius – Lemos-Espinal et al. (2020) reported *M. mentovarius* for Colima, however O'Connell and Smith (2018) showed that the species reported for Colima (*M. mentovarius striolatus*) in fact represents a junior synonym of *M. lineatus*.

Oxybelis fulgidus – This species was listed by Lemos-Espinal et al. (2020) based on a specimen (UCM 50138) which is in fact an individual of *Leptophis diplotropis*. *Oxybelis fulgidus* is restricted to southern Mexico, Central and South America (Heimes, 2016) and does not occur in Colima.

Salvadora lemniscata – This species was listed by Lemos-Espinal et al. (2020) as occurring in Colima based on a single individual (CAS 132121), which is in fact a juvenile *Salvadora mexicana*. *Salvadora lemniscata* is restricted to southern Mexico (Bogert, 1939) and should not be considered part of the herpetofauna of Colima.

***Tantilla planiceps bogerti* (= *T. yaquia*)** – Painter (1976) reported a specimen of this species for Colima (LACM 37333), which in

fact represents an individual of *T. boucouri*. Martínez-Ortega (2005) again reported this species for Colima. *Tantilla yaquia* is restricted to northwestern Mexico and southern Arizona (McDiarmid, 1977), and it should not be considered part of the herpetofauna of Colima.

Family Crotalidae

Crotalus atrox – A single record of this species from the state is listed on Vertnet (SDNHM 21358). This record is likely in error, as this species is restricted to northern and eastern Mexico with a single seemingly isolated population in Oaxaca (Campbell & Lamar, 2004). Despite extensive field work in the state, no additional specimens of *Crotalus atrox* have been recorded in Colima; therefore, the species should not be considered as part of Colima's herpetofauna.

Crotalus polystictus – Duges (1887) described *Crotalus jimenezi* from Guanajuato, which is a junior synonym of *C. polystictus*. In his description of *C. jimenezi* Duges stated “I have received this ophidian from Silao, Colima and Guadalajara”. Since then multiple authors have made reference that this species occurs or is likely occurs in Colima (Campbell & Lamar, 2004; McCranie, 1976), despite the fact that no specimens exist for the state. The closest records for *C. polystictus* come from the Sierra de Tapalpa, approximately 50 km away; however, there is little suitable habitat for this species in the region around the Volcán de Colima and on the Cerro Grande (pers. obs.), so it is unlikely for this species to be found in Colima. Nonetheless, this species should be considered as of possible occurrence until further sampling can confirm or rule out its existence in the state.

Family Dipsadidae

Leptodeira annulata – Martínez-Ortega (2005) reported this species for the state, however he did not list any specimens. These records are probably based on individuals of *L. maculata*, as *L. annulata* is a polytypic species restricted to South America (Daza et al., 2009).

Rhadinaea fulvivittis – This species was reported for Colima by Martínez-Ortega (2005); however, he did not list any voucher specimens. This species is restricted to the Sierra Madre Oriental of Puebla, Veracruz and Oaxaca (Heimes, 2016), and should not be considered part of the herpetofauna of Colima.

Rhadinaea taeniata – The only specimen for the state reported by Lemos-Espinal et al. (CAS 121078) is in fact a *Rhadinaea hesperia*. Currently, this species is not known from Colima;

however, it has been collected near Colima in both Jalisco and Michoacán, and should be considered a species of possible occurrence in the state.

Geophis dugesii – The only specimen listed by Lemos-Espinal et al. (2020) from Colima (MCZ R-11422) was originally reported as “*Dirosema omiltemanum*” and is the holotype of *Geophis semiannulatus*, and its most likely an error with the locality information. The status of this specimen has been discussed previously (Downs, 1967). *Geophis dugesii* has not been collected from Colima; however, the closest population of *G. dugesii* is at Cerro García, Jalisco (Grünwald et al. *in prep*), approximately 100 km NE of Colima. This species should be considered as of possible occurrence in the state.

Family Elapidae

Micrurus diastema – Duellman (1958) reported this species for the state, however it is likely that these records are based on *M. browni*, as *M. diastema* is restricted to southern Mexico in the states of Veracruz, Tabasco, Oaxaca and Chiapas (Reyes-Velasco et al. 2020). This species should not be considered as part of the herpetofauna of Colima.

Micrurus proximans – This species was first listed for the state by Reyes-Velasco et al. (2012) and then again by Lemos-Espinal et al. (2020). This species has recently been synonymized with *M. browni* (Reyes-Velasco et al. 2020). *Micrurus browni* should be considered part of the herpetofauna of Colima while *M. proximans* is a junior synonym of *M. browni*.

Micrurus tener – This species was reported by Reyes-Velasco et al. (2009) and again by Lemos-Espinal et al. (2020), however, recently Reyes-Velasco et al. (2020) showed that, in fact, this population actually represents *M. browni*. *Micrurus tener* is restricted to the east coast of Mexico and should not be considered as part of the herpetofauna of Colima (Reyes-Velasco et al., 2020).

Family Natricidae

Thamnophis eques – A specimen in the University of Illinois (UIMNH 84344) is from “Hilo de Naranjo, 1 mile (1.6 km) across Colima state line”. Information on this specimen does not list the state it was collected. This locality does not exist on any maps, nor are locals familiar with it. There is a locality called El Naranjal, approximately one mile from the Colima / Jalisco border on the Colima - Sahuayo highway; however, it is on the Jalisco side of the border. Additionally, the habitat at this locality

is not congruent with the known habitat of *T. eques*. We have not been able to examine that specimen; however, because of the imprecise locality we doubt Colima as the provenance if it is in fact *T. eques*. Due to suitable habitat for *T. eques* near the town of Montitlán, on the slopes of the Volcán de Colima, we consider this species as of possible occurrence in the state.

Thamnophis melanogaster – Lemos-Espinal et al. (2020) reported on a specimen of this species deposited at the Paris Museum (MNHN RA 1868.161). A second specimen of this species with locality data listed as “Colima” is deposited at the Museum of Comparative Zoology (MCZ R-11421), Harvard University. We were not able to examine either one of these specimens to corroborate their identity; however, the second specimen from Colima (MCZ R-11421) was collected alongside other specimens with erroneous locality data (see account on *Geophis dugesii*). We believe that these two specimens have erroneous locality data. A specimen at the University of Illinois (UIMNH 84350) is from 26.1 mi (42 km) NE of Colima. While this locality is listed to be in Colima, that mileage actually puts it in the vicinity of San Marcos, Jalisco. This is likely the closest known locality to Colima, and the similarity of the habitat to some areas on the slopes of the Volcán de Colima suggest that this species may occur in the state.

Family Sibynophiidae

Scaphiodontophis zateki nothus – Painter (1976) reported a specimen of this now invalid species for Colima (AMNH 22735); however, no locality data exist for this specimen other than “Mexico, probably”. The genus *Scaphiodontophis* is not known from the Pacific versant of Mexico north of Chiapas (Heimes, 2016), and it should not be considered part of the herpetofauna of Colima.

Testudines

Family Cheloniidae

Eretmochelys imbricata – Lemos-Espinal et al. (2020) listed this species as likely to occur in Colima; however, two records already exist for this species in the state. The first one was collected by James A. Oliver in 1935, with locality information listed as “Colima” (UMMZ 80350). The other record is a skeleton collected on the Revillagigedo Islands (SDNHM 47161). Neither of these records had been previously published.

Family Emydidae

Trachemys scripta – This introduced species was not reported

by Lemos-Espinal et al. (2020). Loeza-Corichi (2004) lists this species for the Cerro Grande region of Jalisco-Colima; however, she does not list any museum vouchers. Despite the occurrence of multiple individuals of this species in many bodies of water in the state, it is unknown if a breeding population has been established in Colima (*pers. obs.*).

Family Geoemydidae

***Callopsis areolata* (= *Rhinoclemmys areolata*)** – Painter (1976) listed multiple specimens of this species for the state (UMMZ 80338, UMMZ 80339–46; UMMZ 80347–49,); however, these individuals are actually *R. pulcherrima*. *Rhinoclemmys areolata* is restricted to the Yucatan Peninsula (Legler & Vogt, 2013); therefore, should not be considered part of the herpetofauna of the state.

***Callopsis punctularia* (= *Rhinoclemmys punctularia*)** – Painter (1976) reported three specimens for Colima (UMMZ 80335–37); however, these records are based on specimens of *Rhinoclemmys rubida*. *Rhinoclemmys punctularia* is restricted to South America (Rhodin et al., 2017), and should not be considered part of the herpetofauna of the state.

Crocodylia

Family Crocodylidae

Crocodylus moreletii – Lemos-Espinal et al. (2020) do not report on the occurrence of this introduced species in Colima; however, it has been established in some coastal areas of the state for several years now, specifically in the municipality of Tecomán (Lavín et al., 2014).

New state records for the state of Colima

Below we report on records of species that had not previously been reported for the state of Colima. These new reports are either based on specimens collected by us, or on specimens in museum collections that were not previously published and that we have positively identified.

AMPHIBIA

Anura

Eleutherodactylus angustidigitorum – MEXICO; Colima; Municipality of Cuauhtémoc; 9.1 km (airline) N of Montitlán; 19.484° N, 103.616° W (WGS 84); 2590 m elev.; June 14, 2020; Photographed by Jacobo Reyes-Velasco; One individual found

under a rock in a lava flow surrounded by pine-oak woodland; University of Texas at Arlington Digital Collection, UTADC 9624. Verified by Thomas J. Devitt. MEXICO; Colima; Municipality of Cuauhtémoc; 7.5 km (airline) N of Montitlán; 19.4698° N, 103.6173° W (WGS 84); 2150 m elev.; July 19, 2020; Photographed by Jacobo Reyes-Velasco. One individual found calling from a small bush in pine-oak woodland; University of Texas at Arlington Digital Collection, UTADC 9625 Verified by Thomas J. Devitt. First records for the state. Closest published records for this species are from near Atenquique, Jalisco, approximately 11 km to the NE. Lemos-Espinal et al. (2020) reported this species for Colima, however the specimen reported for Colima (LACM 25450) is from 6 mi (9.6 km) W. Atenquique, Jalisco, on the slopes of the Nevado de Colima, but in the state of Jalisco, not Colima.

Eleutherodactylus petersi – MEXICO; Colima; Municipality of Cuauhtémoc; 3.5 km (airline) N of Montitlán; 19.4334° N, 103.6147° W (WGS 84); 1650 m elev.; June 29, 2020; Photographed by Jacobo Reyes-Velasco; One individual found calling from a bush in an old lava flow surrounded by pine-oak woodland; University of Texas at Arlington Digital Collection, UTADC 9626. Verified by Thomas J. Devitt. First record for the state. This species was reported by Duellman (1958) for Colima; however, the specimens he reported probably represent *E. orarius*, based on the locality where they were collected, Colima city and Tecolapa, both at elevations of less than 500 meters, which is lower than the known distribution of *E. petersi*. Additionally, Tecolapa is the type locality of *Eleutherodactylus orarius* (Dixon, 1957).

Eleutherodactylus rufescens – MEXICO; Colima; Municipality of Cuauhtémoc; 7 km (airline) NNW of Montitlán; 19.4623° N, 103.6386° W (WGS 84); 1846 m elev.; March 30, 2020; Photographed by Jacobo Reyes-Velasco; two individuals collected under a rock in pine-oak woodland; Museo de Zoología, Facultad de Ciencias (MZFC), UNAM, MZFC-26910–11. First record for the state. Closest published records for this species are from near Atenquique, Jalisco, approximately 11 km to the NE (Dixon & Webb, 1966). Lemos-Espinal et al. (2020) reported this species for Colima; however, the specimen they report was actually collected in Jalisco (see discussion on this species above).

REPTILIA

Squamata

Lacertilia

Family Phrynosomatidae

Sceloporus insignis – MEXICO; Colima; Municipality of Cuauhtémoc; 10 km (airline) NNW of Quesería; 19.4679° N, 103.6182° W (WGS 84); 2128 m elev.; March 30, 2020; Photographed by Jacobo Reyes-Velasco; Found under a rock in pine-oak woodland; University of Texas at Arlington Digital Collection, UTADC 9585. Verified by Eric N. Smith. First record for the state. Closest records for this species are approximately 14 km (airline) to the east at 6 km west of Atenquique (Webb, 1967). This species is only known from the Sierra de Coalcomán in Michoacán and from the Nevado de Colima-Volcán de Colima, complex in Jalisco (Webb, 1967).

Sceloporus siniferus – MEXICO; Colima; Municipality of Colima; 4.4 km (by air) SSW of Estapilla; 18.9417° N, 103.5422° W (WGS 84); 219 m elev.; May 27, 2009; Photographed by Jacobo Reyes-Velasco; Found on a tree branch in tropical thorn scrub; University of Texas at Arlington Digital Collection, UTADC 9586. Verified by Eric N. Smith. First record for the state. This species was known from the Pacific versant of Mexico, from Chiapas to Michoacán, as well as Guatemala (Duellman, 1961; Smith & Taylor, 1950). Closest published localities are from the coast of Michoacán (Duellman, 1961).

Serpentes

Family Colubridae

Ficimia publia – MEXICO; Colima; Municipality of Coquimatlán; 13 mi SW of Colima; 19.1290° N, 103.8526° W (WGS 84); 239 m elev.; August 23 1963; Theodore J. Papenfuss and William Gillingham; Museum of Vertebrate Zoology (MVZ) 76354. This specimen represents the first record for Colima and fills a gap in the known distribution of the species between records from approximately 140 km to the west, at Chamela, Jalisco (García & Valtierra-Azotla, 1996) and 70 km southeast at Chinicuila, Michoacán (Torres-Pérez-Coeto et al., 2016).

Family Crotalidae

Crotalus armstrongi – MEXICO; Colima; Municipality of Cuauhtémoc; 7.7 km (airline) NNW of Quesería; 19.4726° N, 103.6189° W (WGS 84); 2200 m elev.; July 25, 2020; Jason M. Jones, Hector Franz & Jacobo Reyes-Velasco; Found under a rock in pine-oak woodland; University of Texas at Arlington Digital Collection, UTADC 9622. Verified by Jonathan A. Campbell. First record for the state. Closest records for this species are approximately 10 km (airline) to the NE at 17mi (27.3 km) west of Atenquique, Jalisco (LACM 25944). Reyes-Velasco et al. (2008) list this species for the state, however the specimens reported in

fact represent the recently described *Crotalus campbelli* (Bryson et al., 2014)”.

Family Dipsadidae

Geophis tarascae – MEXICO; Colima; Municipality of Cuahutémoc; approximately 7 km (airline) NNW of Montitlán; 19.4623° N, 103.6386° W (WGS 84); 1846 m elev.; December 11, 2019; Photographed by Jacobo Reyes-Velasco; found under a rock in pine-oak woodland; University of Texas at Arlington Digital Collection, UTADC 9581. Verified by Luis Canseco-Márquez. This is the first record for the state of Colima, and is located approximately 14 km west from the nearest record near Atenquique, on the Nevado de Colima, Jalisco (Dixon, 1968).

Geophis bicolor – MEXICO; Colima; Municipality of Cuauhtémoc; 10 km (airline) NNW of Quesería; 19.4679° N, 103.6182° W (WGS 84); 2128 m elev.; July 20, 2020; Photographed by Jacobo Reyes-Velasco; Found under a rock in pine-oak woodland; University of Texas at Arlington Digital Collection, UTADC 9623. Verified by Luis Canseco-Márquez. This is the first record for the state of Colima, and is located approximately 12 km west from the nearest record near Atenquique, on the Nevado de Colima, Jalisco (Dixon, 1968).

Family Leptotyphlopidae

Indotyphlops braminus – MEXICO; Colima; Municipality of Villa de Alvarez; City of Villa de Alvarez, Parque El Topocharco; 19.2631° N, 103.7535° W (WGS 84); 507 m elev.; May 6th, 2007; Photographed by Jacobo Reyes-Velasco. University of Texas at Arlington Digital Collection, UTADC 9582. Verified by David Sanchez. First published record for the state. This species has been introduced throughout many regions of the world as it is widely distributed in Mexico. This species has been established in Colima for years and is commonly found in urban gardens, but no published records existed until now.

With the revision of previous erroneous records and the addition of new state records, we list all the known species of amphibians and reptiles for the state of Colima in Tables 1 and 2, respectively.

List of species that are likely to occur in Colima but with no published records

Despite the growing interest in the herpetofauna of Colima,

Tabla 1. Lista revisada de los anfibios de Colima.**Table 1.** Revised list of the amphibians of Colima.**Amphibia**

	Family	Species	Notes
Bufonidae		<i>Anaxyrus compactilis</i>	
		<i>Incilius marmoreus</i>	
		<i>Incilius mazatlanensis</i>	
		<i>Incilius occidentalis</i>	
		<i>Rhinella horribilis</i>	
Craugastoridae		<i>Craugastor augusti</i>	
		<i>Craugastor hobartsmithi</i>	
		<i>Craugastor occidentalis</i>	
		<i>Craugastor vocalis</i>	
Eleutherodactylidae		<i>Eleutherodactylus angustidigitorum</i>	New State Record
		<i>Eleutherodactylus colimotl</i>	
		<i>Eleutherodactylus grunwaldi</i>	
		<i>Eleutherodactylus manantlanensis</i>	
		<i>Eleutherodactylus modestus</i>	
Anura		<i>Eleutherodactylus orarius</i>	
		<i>Eleutherodactylus petersi</i>	New State Record
		<i>Eleutherodactylus rufescens</i>	New State Record
		<i>Dendropsophus sartori</i>	
Hylidae		<i>Dryophytes arenicolor</i>	
		<i>Dryophytes eximius</i>	
		<i>Exerodonta smaragdina</i>	
		<i>Smilisca baudini</i>	
		<i>Smilisca fodiens</i>	
		<i>Tlalocohyla smithii</i>	
		<i>Trachycephalus vermiculatus</i>	
		<i>Triprion spatulatus</i>	
Leptodactylidae		<i>Leptodactylus fragilis</i>	
		<i>Leptodactylus melanotonus</i>	
Microhylidae		<i>Hypopachus ustus</i>	
		<i>Hypopachus variolosus</i>	
Phyllomedusidae		<i>Agalychnis dacnicolor</i>	

Amphibia

	Family	Species	Notes
Anura	Ranidae	<i>Rana af. forreri</i>	
		<i>Rana neovolcanica</i>	
		<i>Rana psilonota</i>	
	Scaphiopodidae	<i>Rana pustulosa</i>	
		<i>Rana zweifeli</i>	
Caudata	Ambystomatidae	<i>Spea multiplicata</i>	
	Plethodontidae	<i>Ambystoma velasci</i>	
		<i>Isthmura bellii</i>	
Gymnophiona	Caeciliidae	<i>Dermophis oaxacae</i>	

Tabla 2. Lista revisada de los reptiles de Colima.**Table 2.** Revised list of the reptiles of Colima.**Reptilia**

	Family	Species	Notes
Squamata Lacertilia	Anguidae	<i>Barisia imbricata</i>	
		<i>Elgaria kingii</i>	
		<i>Gerrhonotus liocephalus</i>	
	Corythopanidae	<i>Basiliscus vittatus</i>	
	Dactyloidae	<i>Anolis nebulosus</i>	
	Eublepharidae	<i>Coleonyx elegans</i>	
	Geckonidae	<i>Gehyra mutilata</i>	Introduced
		<i>Hemidactylus frenatus</i>	Introduced
	Helodermatidae	<i>Heloderma horridum</i>	
	Iguanidae	<i>Ctenosaura pectinata</i>	
		<i>Iguana iguana</i>	
Phrynosomatidae	Phrynosomatidae	<i>Phrynosoma asio</i>	
		<i>Sceloporus asper</i>	
		<i>Sceloporus bulleri</i>	
		<i>Sceloporus dugesii</i>	
	Phrynosomatidae	<i>Sceloporus grammicus</i>	

Reptilia

	Family	Species	Notes
Squamata Lacertilia	Phrynosomatidae	<i>Sceloporus horridus</i>	
		<i>Sceloporus insignis</i>	New State Record
		<i>Sceloporus melanorhinus</i>	
		<i>Sceloporus pyrocephalus</i>	
		<i>Sceloporus siniferus</i>	New State Record
		<i>Sceloporus unicanthalis</i>	
		<i>Sceloporus utiformis</i>	
		<i>Urosaurus auriculatus</i>	Revillagigedo Islands
		<i>Urosaurus bicarinatus</i>	
		<i>Urosaurus clarionensis</i>	Revillagigedo Islands
Serpentes	Phyllodactylidae	<i>Phyllodactylus davisi</i>	
		<i>Phyllodactylus rupinus</i>	
	Scincidae	<i>Marisora aquilonaria</i>	
		<i>Plestiodon colimensis</i>	
		<i>Plestiodon af. indubitus</i>	
		<i>Plestiodon parvulus</i>	
		<i>Scincella assata</i>	
	Teiidae	<i>Aspidoscelis communis</i>	
		<i>Aspidoscelis lineattissimus</i>	
		<i>Holcosus sinistri</i>	
	Xantusiidae	<i>Lepidophyma tarascae</i>	
	Colubridae	<i>Boa sigma</i>	
		<i>Conopsis biserialis</i>	
		<i>Drymarchon melanurus</i>	
		<i>Drymobius margaritiferus</i>	
		<i>Ficimia publia</i>	New State Record
		<i>Lampropeltis polyzona</i>	
		<i>Leptophis diplotropis</i>	
		<i>Masticophis anthonyi</i>	Revillagigedo Islands
		<i>Masticophis bilineatus</i>	
		<i>Masticophis lineatus</i>	
		<i>Mastigodryas melanolomus</i>	

Reptilia

	Family	Species	Notes
Serpentes	Colubridae	<i>Oxybelis aeneus</i>	
		<i>Pituophis deppei</i>	
		<i>Pseudoficimia frontalis</i>	
		<i>Salvadora mexicana</i>	
		<i>Senticolis triaspis</i>	
		<i>Sanora michoacanensis</i>	
		<i>Syphimus leucostomus</i>	
		<i>Tantilla bocourti</i>	
		<i>Tantilla calamarina</i>	
		<i>Tantilla ceboruca</i>	
	Crotalidae	<i>Trimorphodon biscutatus</i>	
		<i>Trimorphodon tau</i>	
		<i>Agkistrodon bilineatus</i>	
		<i>Crotalus armstrongi</i>	New State Record
		<i>Crotalus basiliscus</i>	
		<i>Crotalus campbelli</i>	
		<i>Crotalus lannomi</i>	
		<i>Crotalus pusillus</i>	
		<i>Porthidium hespere</i>	
		<i>Clelia scytalina</i>	
	Dipsadidae	<i>Coniophanes lateritus</i>	
		<i>Conophis vittatus</i>	
		<i>Dipsas gaigeae</i>	
		<i>Enulius flavitorques</i>	
		<i>Geophis pyburni</i>	
		<i>Geophis sieboldi</i>	
		<i>Geophis bicolor</i>	New State Record
		<i>Geophis tarascae</i>	New State Record
		<i>Hypsiglena torquata</i>	
		<i>Hypsiglena unaocularus</i>	Revillagigedo Islands
		<i>Imantodes gemmistratus</i>	
		<i>Leptodeira maculata</i>	

Reptilia

	Family	Species	Notes
Serpentes	Dipsadidae	<i>Leptodeira septentrionalis</i>	
		<i>Leptodeira splendida</i>	
		<i>Leptodeira uribei</i>	
		<i>Manolepis putnami</i>	
		<i>Pseudoleptodeira latifasciata</i>	
		<i>Rhadinaea hesperia</i>	
		<i>Sibon nebulatus</i>	
		<i>Tropidodipsas annulifera</i>	
		<i>Tropidodipsas philippii</i>	
	Elapidae	<i>Hydrophis platurus</i>	
Testudines	Leptophyphlopidae	<i>Micrurus browni</i>	
		<i>Micrurus distans</i>	
		<i>Micrurus laticollaris</i>	
		<i>Epictia bakewelli</i>	
	Loxocemidae	<i>Indotyphlops braminus</i>	New State Record / Introduced
		<i>Rena dugesii</i>	
	Natricidae	<i>Loxocemus bicolor</i>	
		<i>Storeria storerioides</i>	
		<i>Thamnophis cyrtopsis</i>	
Crocodylia	Cheloniidae	<i>Thamnophis validus</i>	
		<i>Caretta caretta</i>	
		<i>Chelonia mydas</i>	
		<i>Eretmochelis imbricata</i>	
		<i>Lepidochelys olivacea</i>	
		<i>Dermochelys coriacea</i>	
		<i>Trachemys scripta</i>	Introduced
	Geoemydidae	<i>Rhinoclemmys pulcherrima</i>	
		<i>Rhinoclemmys rubida</i>	
	Kinosternidae	<i>Kinosternon chimalhuaca</i>	
		<i>Kinosternon integrum</i>	
	Crocdylidae	<i>Crocodylus acutus</i>	
		<i>Crocodylus moreletii</i>	Introduced

much work remains to be done, especially in the mountainous areas such as the Volcán de Colima, the Sierra de Manantlán and the Serranías de Piscila (see Fig. 1). It is possible that many species that have not been reported for the state could be found there. The species that could potentially occur in Colima can be divided into five categories: 1) Coastal plain species known from the coast of Michoacán or Jalisco, but not Colima; 2) Species that occur in the Tepalcatepec Valley of Jalisco and Michoacán, which could enter the dry river valleys in the northeastern corner of the state; 3) Species that occur in the coastal sierras of Jalisco, such as Sierra Cuale, Sierra Mascota, Sierra Cacoma and Sierra de Manantlán, which could occur in the eastern portions of the Sierra de Manantlán; 4) Species occurring in the Sierra de Coalcomán in Michoacán, which could occur in the Serranías de Piscila or in the Sierra de Manantlán and 5) Species that occur in the western portion of the Trans-Mexican Volcanic Belt in

Jalisco, such as the Sierra de Tapalpa, Sierra del Tigre, or the Jalisco portion of the Volcán-Nevado de Colima complex, but have not been reported on the Colima side. We present a list of species of amphibians and reptiles that could potentially occur in Colima in Table 3, while Figure 2 shows the location of areas discussed in Table 3.

DISCUSSION AND CONCLUSIONS

Our revision of the herpetofauna of Colima shows that it is composed of 38 species of amphibians (37 frogs, two salamanders & one caecilian) and 112 species of reptiles (63 snakes, 37 lizards, 10 turtles & two crocodilians). Of all species in Colima, five species of reptiles are introduced. We also show that 56 other species, 9 amphibians and 47 reptiles could potentially occur in the state but have not been collected yet.

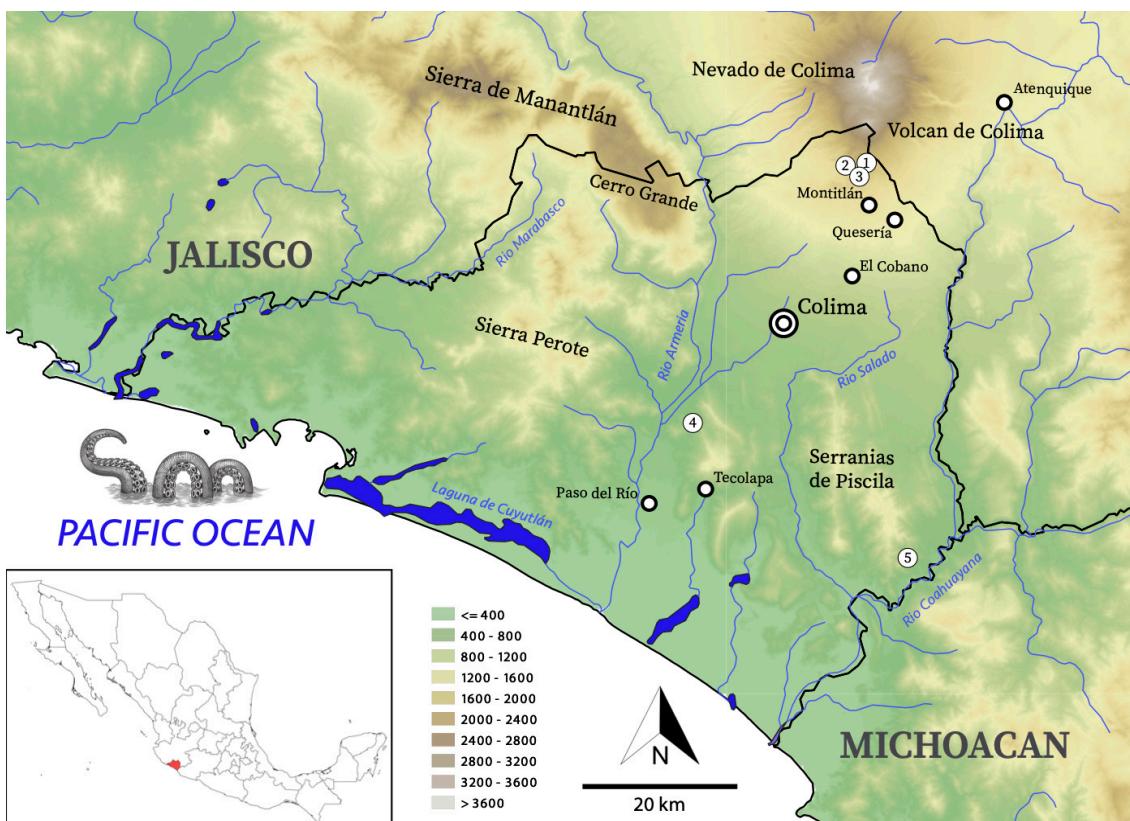


Figura 1. Mapa de Colima mostrando las localidades mencionadas en el texto. Los números representan las localidades de nuevos registros para el estado. 1) *Eleutherodactylus angustidigitorum*, *Crotalus armstrongi*, *Geophis bicolor* & *Sceloporus insignis*; 2) *Eleutherodactylus rufescens* & *Geophis tarascae*; 3) *Eleutherodactylus petersi*; 4) *Ficimia publia*; 5) *Sceloporus siniferus*. *Indotyphlops braminus* fue encontrado en la zona metropolitana de la ciudad de Colima.

Figure 1. Map of Colima showing localities discussed in the text. Numbers represent localities of new records for the state. 1) *Eleutherodactylus angustidigitorum*, *Crotalus armstrongi*, *Geophis bicolor* & *Sceloporus insignis*; 2) *Eleutherodactylus rufescens* & *Geophis tarascae*; 3) *Eleutherodactylus petersi*; 4) *Ficimia publia*; 5) *Sceloporus siniferus*. *Indotyphlops braminus* was found on the Colima metropolitan area.

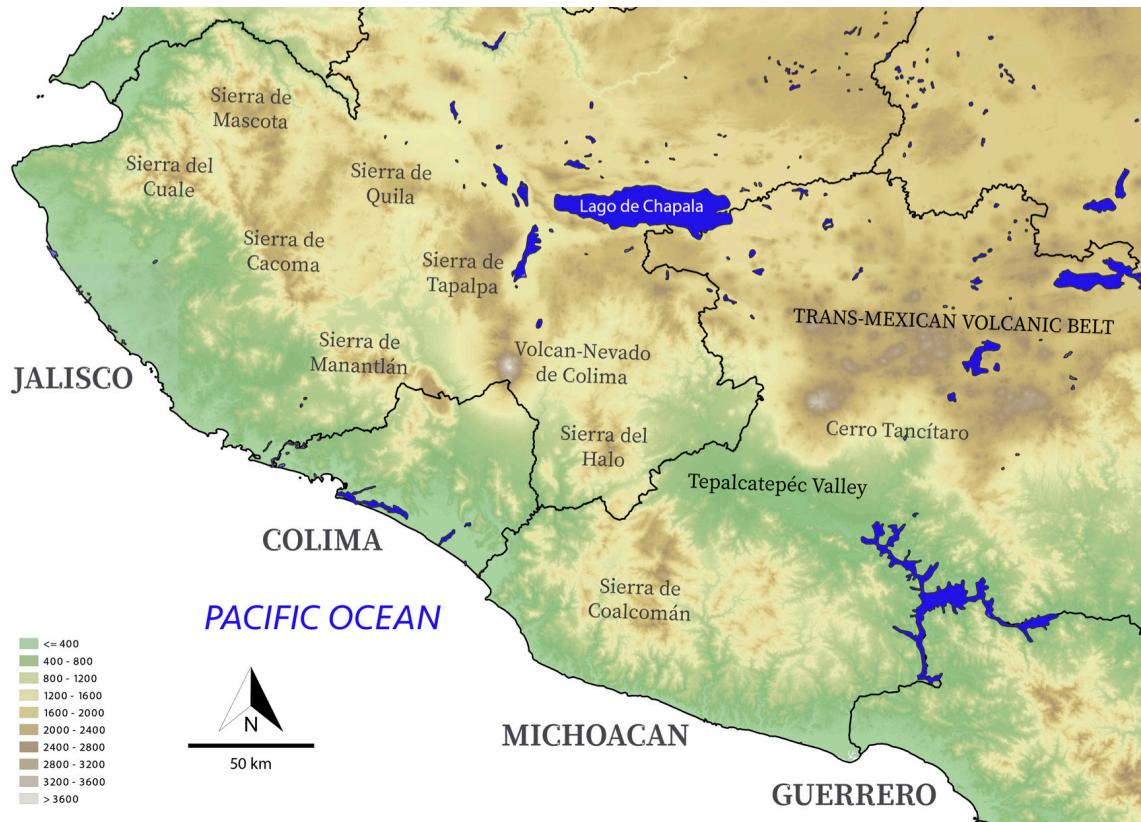


Figura 2. Mapa del occidente de México mostrando las localidades mencionadas en la Tabla 2.

Figure 2. Map of western Mexico showing localities discussed in Table 2.

Researchers should take care when deciding what species to include or exclude from a particular checklist, particularly if they haven't collected or examined the specimens themselves. Publishing checklists that are not carefully put together could potentially do more harm than good, as governmental agencies, as well as other institutions and researchers use these lists for a multitude of goals, including conservation planning. As we discussed above, the herpetofaunal list for the state of Colima published by Lemos-Espinal et al. (2020) is a prime example of a poorly compiled herpetofaunal checklist. Lemos-Espinal et al. used unverified records in online databases such as Vernet and GBIF, with no apparent effort to confirm identifications, and did not review localities to determine if they were indeed in the state. In recent years there has been an increase in herpetofaunal checklists afflicted by similar inaccuracies and omissions, prompting one of us (JRV) to address some of the common issues with many of the recently published state lists for Mexico (Reyes-Velasco & Ramírez-Chaparro, 2019). After having reviewed other publications by these authors, we have observed lots of errors on other herpetofaunal state lists for Mexico and we encourage other herpetologists to revise those state lists as well.

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Tabla 3. Lista de las especies de anfibios y reptiles de posible ocurrencia en Colima.**Table 3.** List of species of amphibians and reptiles of possible occurrence in Colima.

	Family	Species	Distribution
Amphibians Anura	Bufonidae	<i>Incilius perplexus</i>	Tepalcatepec Valley
		<i>Incilius pisinnus</i>	Tepalcatepec Valley
	Eleutherodactylidae	<i>Eleutherodactylus jaliscoensis</i>	Sierra de Manantlán, Jalisco
		<i>Eleutherodactylus nietoi</i>	Sierra de Coalcomán, Michoacán
	Hylidae	<i>Sarcohyla hapsa</i>	Nevado de Colima & Manantlán, Jalisco
		<i>Rana catasbeiana</i>	Possibly introduced in Colima
	Ranidae	<i>Rana magnaocularis</i>	Sierra de Quila, Jalisco
		<i>Rana megapoda</i>	Central Jalisco
	Rhinophrynidiae	<i>Rhinophryne dorsalis</i>	Coast of Michoacán
	Iguanidae	<i>Ctenosaura clarki</i>	Tepalcatepec Valley
Reptiles Squamata Lacertilia	Phrynosomatidae	<i>Sceloporus aeneus</i>	Trans-Mexican Volcanic Belt
		<i>Sceloporus dugesii</i>	Nevado de Colima, Jalisco
		<i>Sceloporus gadovi</i>	Tepalcatepec Valley
		<i>Sceloporus heterolepis</i>	Sierra de Tapalpa, Jalisco
		<i>Sceloporus torquatus</i>	Trans-Mexican Volcanic Belt
	Phyllodactylidae	<i>Urosaurus gadovi</i>	Tepalcatepec Valley
		<i>Phyllodactylus duellmani</i>	Tepalcatepec Valley
		<i>Phyllodactylus benedettii</i>	Coast of Jalisco
		<i>Phyllodactylus paucituberculatus</i>	Tepalcatepec Valley
		<i>Phyllodactylus tuberculatus</i>	Central Jalisco
Serpentes	Teiidae	<i>Anolis dunnii</i>	Tepalcatepec Valley
		<i>Aspidoscelis calidipes</i>	Tepalcatepec Valley
		<i>Aspidoscelis costatus</i>	Central Jalisco
		<i>Aspidoscelis deppii</i>	Coast of Michoacán
	Colubridae	<i>Adelophis copei</i>	Sierra de Tapalpa, Jalisco
		<i>Conopsis lineatus</i>	Nevado de Colima, Jalisco
		<i>Conopsis nasus</i>	Sierra de Tapalpa, Jalisco
		<i>Diadophis dugesii</i>	Sierra de Tapalpa, Jalisco
		<i>Lampropeltis ruthveni</i>	Sierra de Tapalpa & Cacoma, Jalisco
		<i>Leptodeira nigrofasciata</i>	Coast of Michoacán
		<i>Pituophis lineaticollis</i>	Sierra de Coalcomán, Michoacán
		<i>Rhadinaea laureata</i>	Sierra de Manantlán, Jalisco

	Family	Species	Distribution
Serpentes	Colubridae	<i>Rhadinaea taeniata</i>	Sierra de Manantlán, Jalisco
		<i>Salvadora bairdi</i>	Central Jalisco
		<i>Sonoraa mutabilis</i>	Central Jalisco
		<i>Stenorrhina freminvillei</i>	Coast of Michoacán
	Crotalidae	<i>Tantilla cascadiae</i>	Sierra del Halo, Jalisco
		<i>Crotalus culminatus</i>	Coast of Michoacán
	Dipsadidae	<i>Crotalus polystictus</i>	Sierra de Tapalpa, Jalisco
		<i>Coniophanes fissidens</i>	Coast of Michoacán
		<i>Coniophanes melanoleucus</i>	Tepalcatepec Valley
		<i>Coniophanes mictlachacanensis</i>	Coast of Michoacán
		<i>Geophis dugesii</i>	Central Jalisco
		<i>Geophis inexpectatus</i>	Sierra de Coalcomán, Michoacán
		<i>Geophis maculiferus</i>	Trans-Mexican Volcanic Belt
		<i>Geophis nigrocinctus</i>	Sierra de Manantlán, Jalisco
	Leptophylidae	<i>Geophis petersi</i>	Trans-Mexican Volcanic Belt
		<i>Hypsiglena affinis</i>	Central Jalisco
		<i>Rena bressoni</i>	Tepalcatepec Valley
		<i>Thamnophis eques</i>	Central Jalisco
	Natricidae	<i>Thamnophis melanogaster</i>	Central Jalisco
		<i>Thamnophis pulchrilatus</i>	Highlands of Central Jalisco
		<i>Thamnophis scalaris</i>	Highlands of Central Jalisco
Amphisbaenians	Amphisbaenidae	<i>Bipes canaliculatus</i>	Tepalcatepec Valley
Testudines	Emydidae	<i>Terrapene nelsoni</i>	Sierra de Quila, Jalisco
		<i>Trachemys ornata</i>	Coast of Jalisco & Guerrero

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