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**CENTRO UNIVERSITARIO DE CIENCIAS BIOLÓGICAS
Y AGROPECUARIAS**

DIVISIÓN DE CIENCIAS BIOLÓGICAS Y AMBIENTALES



**NEW STATE RECORDS OF AMPHIBIANS AND REPTILES
FROM COLIMA, MÉXICO**

**TRABAJO DE TITULACIÓN EN LA MODALIDAD DE:
INVESTIGACIÓN Y ESTUDIOS DE POSTGRADO**

**QUE PARA OBTENER EL TÍTULO DE
LICENCIADO EN BIOLOGÍA**

**PRESENTA
JACOBO REYES VELASCO**

Las Agujas, Zapopan, Jal., Julio de 2009



Universidad de Guadalajara
Centro Universitario de Ciencias Biológicas y
Agropecuarias

Coordinación de carrera de Licenciado en Biología

C. JACOBO REYES VELASCO

PRESENTE

Manifestamos a usted que con esta fecha ha sido aprobado su tema de titulación en la modalidad de: **INVESTIGACIÓN Y ESTUDIOS DE POSGRADO** opción **SEMINARIO DE INVESTIGACIÓN** con el título: **“New State Records for Amphibians and Reptiles from Colima, México.”** para obtener la Licenciatura en Biología.

Al mismo tiempo le informamos que ha sido aceptado como Directora de dicho trabajo la **DRA. SONIA NAVARRO PÉREZ.**

Sin más por el momento, reciba un cordial saludo.

ATENTAMENTE
“PIENSA Y TRABAJA”,
“2009, Año del Bicentenario de Charles Darwin”
Las Agujas, Zapopan, Jal., 15 de julio de 2009.



DRA. GEORGINA ADRIANA QUIROZ ROCHA
PRESIDENTE DEL COMITÉ DE TITULACIÓN



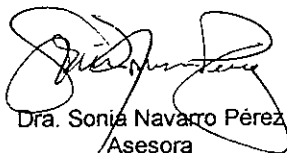
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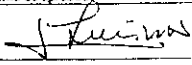


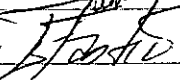
Nos permitimos informar a usted que habiendo revisado el trabajo de titulación, modalidad Investigación y estudios de posgrado, opción: seminario de investigación, titulado: "New state records of Amphibians and Reptiles from Colima, Mexico", que realizó el/la pasante Jacobo Reyes Velasco con número de código B04009029 consideramos que ha quedado debidamente concluido, por lo que ponemos a su consideración el escrito final para autorizar su impresión.

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Atentamente
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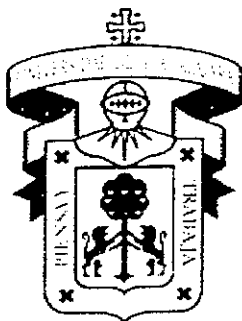


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- Familia Velasco Lafarga
- Ginny N. Weatherman

A mi abuela....
“el que persevera alcanza”

TANTILLA HOBARTSMITHI (Smith's Black-headed Snake). USA: TEXAS: IRION CO.: 2.2 air miles SW of Barnhart on CR311 (31.1134667°N, 101.2040667°W). 2600 ft elev. 03 April 2007. M. S. Price and J. T. Fisher. Verified by Travis LaDuc. Texas Natural History Collections (TNHC 68556, photo voucher). New county record (Dixon 2000. *Amphibians and Reptiles of Texas*, 2nd ed. Texas A&M University Press, College Station, Texas. 421 pp.).

Submitted by MICHAEL S. PRICE, San Angelo Nature Center, 7409 Knickerbocker Road, San Angelo, Texas 76904, USA; e-mail: michael.price@sanangelotexas.us.

XENOPHOLIS UNDULATUS (Jensen's Ground Snake). BRAZIL: CEARÁ: Municipality of Ubajara, Ubajara National Park (03.840278°S, 40.907500°W; WGS84), 896 m elev. 09 September 2008. Coleção Instituto Butantan, São Paulo, Brazil (IBSP 76832). Municipality of Ubajara, Ubajara National Park (03.838346°S, 40.911467°W; WGS84), 829 m elev. 07 November 2008. IBSP 77110. Both specimens were collected by D. N. Lima, and verified by F. L. Franco. The species was recorded for Paraguay and Brazilian states of Goiás, Maranhão, Mato Grosso do Sul, Minas Gerais, Pará, Paraná, São Paulo, and Tocantins (Cunha and Nascimento 1993. *Bol. Mus. Para. Emílio Goeldi, sér. Zool.* 9[1]: 1–191; França et al. 2006. *SNOMNH Occas. Pap.* [17]: 1–13). These new records represent an isolated population in the rainforests of Ibiapaba's plateau and also are the first report for the genus in Ceará state and from the Caaúnga biome. Extends distribution ca. 770 km NE from Porto Franco municipality, Maranhão state, Brazil, and ca. 1220 km E from Carajás municipality, Pará state, Brazil (Cunha et al. 1985. *Publ. Avul. Mus. Para. Emílio Goeldi* 40:9–85).

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New State Records for Amphibians and Reptiles from Colima, Mexico

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The herpetofauna of Colima, México, has not been thoroughly sampled. There have been only two published inventories for the state, but both appeared during the middle of the last century. Oliver (1937) reported on a collection from Colima and recorded 61 species of amphibians and reptiles from the state. Later, Duellman (1958) reported 85 non-marine species, and of those, 80 are still considered valid, although many have experienced taxonomic name changes. Since 1958, another 21 species were added to the state's list from a variety of publications revising specific groups, describing new taxa, or reporting new discoveries due to expanded field work. Therefore, 101 species of non-marine reptiles and amphibians were known to occur in Colima prior to the survey reported on herein.

Between January 2004 and October 2006, we surveyed the mainland herpetofauna from every municipality in the state of Colima and documented 94 of the 101 terrestrial species previously recorded. We did not sample marine species and three of the terrestrial forms are endemic to islands that were not visited. We also discovered 21 species that had never been reported from the state, including two salamanders, one caecilian, four anurans, five lizards, and nine snakes. Although we sampled every major habitat present on mainland Colima, our efforts were primarily focused in four areas: 1) tropical deciduous forest and tropical thorn scrub in the Municipality of Ixtlahuacán; 2) tropical thorn scrub, tropical deciduous forest, tropical semi-deciduous forest, and mixed tropical deciduous/oak woodland along México Hwy. 98 between the cities of Colima and Manzanillo, in the Municipalities of Comala, Manzanillo, Minatitlán, and Villa de Álvarez; 3) pine-oak woodland and cloud forest in the Sierra de Manantlán, Municipality of Minatitlán; and 4) tropical thorn scrub and mixed mesquite grassland/tropical thorn scrub at higher elevations above the city of Colima in the Municipalities of Colima, Comala, Cuauhtemoc, and Villa de Álvarez. See Fig.

for a map depicting collecting localities for individuals listed in the species accounts. Those accounts may include only one voucher for a larger series observed within a given locality. All our authors were involved in collecting voucher specimens and taking digital photographs. Preserved specimens were deposited in the Museo de Zoología, Facultad de Ciencias (MZFC) and drying photographs were placed in the Digital Collection, University of Texas at Arlington (UTADC). Vouchers deposited in MZFC were verified by Edmundo Pérez-Ramos and those deposited in UTADC by Fernando Mendoza-Quijano. Coordinates and elevations were taken with a GPS device using map datum NAD83. New state records for the 21 species of amphibians and reptiles from Colima are as follows.

Anura

Dendropsophus sartori (Taylor's Yellow Treefrog). Municipality of Colima: 1.6 km E of México Hwy. 110 on road to Tepamcs 19.105727°N, 103.405559°W), 476 m elev. 6 July 2004. UTADC 1020. Municipality of Manzanillo: 3 km NE Tepahuajes (México Hwy. 98 446 m elev. (19.153846°N, 104.101999°W),

446 m elev. 28 June 2004. UTADC 1021. These records fill a significant gap in the known distribution of this species between the Chamela-Cuixmala region of southwestern Jalisco and the coast of central Guerrero (Duellman 2001). Both samples were males found calling in flooded agricultural fields surrounded by tropical deciduous forest.

Hyla arenicolor (Canyon Treefrog). Municipality of Colima: 5 km (by air) SW of Tepamcs (19.0816°N, 103.666°W) 870 m elev. 7 January 2005. UTADC 1018. This record is a range extension of ca. 90 km S of the two nearest published records, 4 km NE Ciudad Guzman, Jalisco, and 14.4 km NE Union de Tula, Jalisco (Duellman 2001). Numerous males were found calling from rocks next to an intermittent stream in tropical deciduous forest.

Hyla eximia (Mountain Treefrog). Municipality of Villa de Alvarez: H Naranjal (19.243741°N, 103.392046°W), 1443 m elev. 23 September 2006. UTADC 1019. The record represents a range extension of 40 km SW of the closest known locality in southern Jalisco (Duellman 2001). Frogs were found calling in a flooded field within an ecotone between tropical thorn scrub and mesquite grassland.

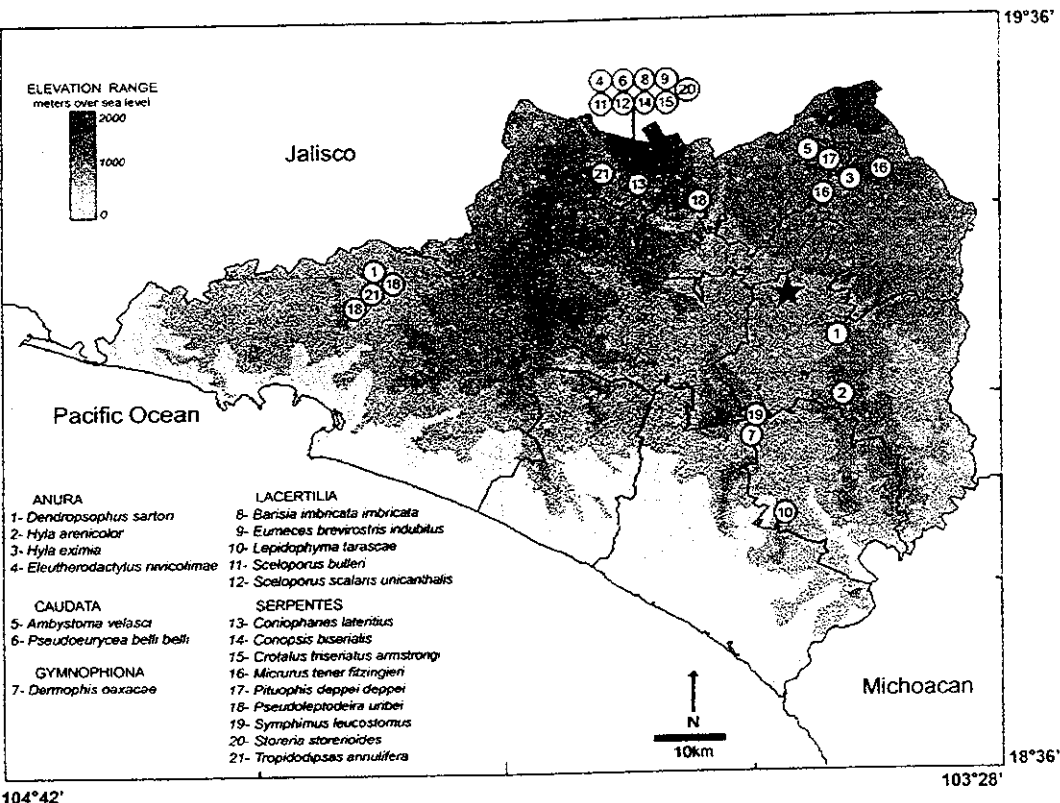


FIG. 1. Map of Colima, México showing collection localities reported in the text and a list of species collected from those localities. The star indicates the city of Colima.

Eleutherodactylus nivicolimae (Nevado de Colima Chirping Frog). Municipality of Minatitlán: Sierra Manantlán: 2.3 km SW (by road) of El Terrero (19.261686°N, 103.573144°W), 2040 m elev. 11 July 2004. UTADC 1033. This record represents a range extension of approximately 46 Km SW of the closest known localities on Nevado de Colima, in Jalisco (Dixon and Webb 1966). The frog was calling at 2200 h from the base of a tree in oak forest.

Caudata

Ambystoma velasci (Plateau Tiger Salamander). Municipality of Comala: 13 km NNE of Comala (19.251511°N, 103.405721°W), 1520 m elev. 9 February 2007. UTADC 1037. This record is a range extension of 60 km S from the closest known locality 2.68 km E Tapalpa, Jalisco (McKnight and Shaffer 1997). The series is composed of larvae captured in a flooded grassy field, two of which were kept in captivity until metamorphosis to facilitate identification, and then released. Surrounding vegetation was a mix of tropical thorn scrub and mesquite grassland.

Pseudoeurycea bellii bellii (Bell's False Brook Salamander). Municipality of Minatitlán: 2.5 km SE of El Terrero (19.25528°N, 103.54510°W), 2164 m elev. 11 July 2004. MZFC19769. This locality is a range extension of ca. 8 km SE of El Tepeixtle, Tolimán, Jalisco, which was initially recorded erroneously from Colima by Mendoza-Quijano et al. (1995). The salamander was found under a log in cloud forest. It is noteworthy that the species is presently abundant at this site.

Gymnophiona

Dermophis oaxacae (Oaxacan Caecilian). Municipality of Ixtlahuacán: 2.8 km (by road) SW of La Salada (19.01816°N, 103.47446°W), 297 m elev. 24 June 2006. UTADC 1016. This record represents a range extension of ca. 150 km S from the closest reported locality, 50 NE Autlán, Jalisco (Savage & Wake 2001). The specimen was found AOR on a rainy night in tropical deciduous forest.

Lacertilia

Barisia imbricata imbricata (Imbricate Alligator Lizard). Municipality of Minatitlán: Sierra de Manantlán: 2.5 km SE of El Terrero (19.255454°N, 103.56444°W), 2200 m elev. 15 August 2004. UTADC 1012. This record represents a range extension of ca. 37 km ESE from the nearest reported locality on the Sierra de Manantlán in adjacent Jalisco (Guillette and Smith 1982). Several juveniles and the reported adult were seen crawling in leaf litter on a hillside covered by oak woodland.

Eumeces bevirostris indubitus (Mexican Shortnose Skink). Municipality of Minatitlán: Sierra de Manantlán: El Terrero, 2183 m elev. (19.2540°N, 103.938889°W). 11 July 2004. UTADC 1017. This record represents a 43 km SW range extension from the nearest reported locality near Atenquique, Jalisco (Dixon 1969). Individuals of the species were commonly observed at the site in pine-oak woodland under rocks and in leaf litter.

Lepidophyma tarascae (Tarascan Tropical Night Lizard). Municipality of Ixtlahuacán: 1 km NW of San Gabriel (18.55339°N, 103.44016°W), 538 m elev. 3 July 2005. UTADC 1022. This record extends known distribution 95 km WNW

from closest reported locality in the Municipality of Aguililla, Michoacán (Guzmán-Villa et al. 1998). The specimen was found at dusk in a crack of a limestone wall in tropical deciduous forest, which is the same plant formation reported by Bezy et al. (1982) at the type locality. Guzmán-Villa et al. (1998) erroneously suggested that the species is restricted to pine-oak woodland.

Sceloporus bulleri (Buller's Spiny Lizard). Municipality of Minatitlán: Sierra de Manantlán: 1.7 km SW of El Terrero (19.2604°N, 103.5740°W), 2098 m elev. 11 July 2004. UTADC 1029. This record represents a range extension of ca. 65 km SE of the closest known locality in SW Jalisco (Webb 1967). The species was commonly observed on dead trees and under rocks at this site, which is situated in pine-oak woodland.

Sceloporus scalaris unicanthalis (Smith's Bunch Grass Lizard). Municipality of Minatitlán: Sierra de Manantlán: 3.5 km SE El Terrero (19.252494°N, 103.543354°W), 2160 m elev. UTADC 1030. 3 August 2005. This record represents a range extension of ca. 40 Km SW of other known localities in Jalisco on Nevado de Colima and vicinity of Ciudad Guzmán (Smith et al. 1997). The lizard was found among bunch grass in an open mountain meadow surrounded by pine-oak woodland.

Serpentes

Coniophanes lateralis (Cope's Stripeless Snake). Municipality of Minatitlán: 6.4 km W of junction of México Hwy. 98 and road to El Sauz (19.225443°N, 103.57704°W), 750 m elev. 9 August 2005. UTADC 1013. This record represents a SE range extension of 110 km from the nearest reported locality in Jalisco (Ponce-Campos & Smith 2001). The specimen was found AOR at ca. 1500 h in tropical deciduous forest.

Conopsis biserialis (Two-lined Mexican Earth Snake). Municipality of Minatitlán: 2.5 km SE of El Terrero (19.135838°N, 104.12384°W), 2200 m elev. 15 August 2004. UTADC 1014. This record represents a SW range extension of 40 km from the nearest locality on Nevado de Colima in Jalisco (Goyenechea & Flores-Villela 2006). Numerous other samples were found under rocks in pine-oak forest.

Crotalus triseriatus armstrongi (Armstrong's Dusky Rattlesnake). Municipality of Minatitlán: Sierra de Manantlán: 1.7 km SW El Terrero (19.2604°N, 103.5740°W), 2098 m elev. 15 August 2004. UTADC 1015. This expected record extends the known range ca. 12 km N of other localities on the Sierra de Manantlán in adjacent Jalisco (Campbell and Lamar 2004). The snake was found crossing a dirt road at 1900 h in oak forest. It is noteworthy to mention that the species was locally abundant in the vicinity of this site, as over 30 individuals have been found there during the past three years.

Micrurus tener fitzingeri (Fitzinger's Coral Snake). Municipality of Cuauhtémoc: vicinity of Montitlán, 30 km (airline) NNW of Colima, (19.244323°N, 103.361477°W), 1480 m elev. 13 February 2004. MZFC 19743. Municipality of Villa de Alvarez: vicinity of El Carrizal, 17.5 km (airline) N of Colima (19.233248°N, 103.402168°W), 1291 m elev. 23 November 2005. MZFC 19746. These records represent a 350 km range extension W of the closest known localities in western Queretaro (Campbell and Lamar 2004). Both snakes were found in tropical thorn scrub.

- Pituophis deppei deppei* (Mexican Bullsake). Municipality of Comala: Laguna Carrizalillos: 19.5 km N of Colima (19.244553°N, 103.402534°W), 1492 m elev. 3 August 2005. UTADC 1026. This record represents a range extension of 60 km S from the nearest known locality at Tapalpa, Jalisco (Campbell 1979). The area is in an ecotone between tropical thorn scrub and oak forest.
- Pseudoleptodeira uribei* (Uribe's False Cat-eyed Snake). Municipality of Comala: 4 km SW of Juliapan, on México Hwy. 98 (19.182966°N, 103.511855°W), 494 m elev. 14 May 2004. MZFC 19752. Municipality of Manzanillo: 2 km SW Tepehuajes, on México Hwy. 98 (19.181829°N, 103.513089°W), 482 m elev. 8 May 2004. MZFC 19775. 3 km NE Tepehuajes, on México Hwy. 98 (19.152967°N, 104.101939°W), 453 m elev. 29 June 2004. UTADC 1028. These records help fill a 190 km distributional gap between Estación de Biología Chamela, Jalisco, the type locality (Ramírez-Bautista and Smith 1992), and Ijido Maquili, Michoacán (Mijangos et al. 2007). All three specimens were found DOR in tropical deciduous forest.
- Storeria storerioides* (Mexican Brown Snake). Municipality of Minatitlán: Sierra de Manantlán: 2.5 km SE of El Terrero (19.255454°N, 103.56444°W), 2200 m elev. 11 June 2004. UTADC 1031. This record fills a distributional gap between localities at Chinicuila, Michoacán (Ponce-Campos et al. 2003) and Tapalpa, Jalisco (Campbell 1979). The snake was found under leaf litter in oak forest.
- Symphimus leucostomus* (Isthmian White-lipped Snake). Municipality of Ixtlahuacán: 1.7 km NE of La Salada (19.0653306°N, 103.7819833°W), 448 m elev. 11 October 2004. UTADC 1032. This record fills a distributional gap between 14.2 km S of La Huerta, Jalisco (Rossman and Shaefer 1974) and 23 km NW of Punta San Telmo, Michoacán (Alvarez and Diaz-Pardo 1982). The snake was found DOR in tropical deciduous forest.
- Tropidodipsas annulifera* (Western Snailsucker). Municipality of Minatitlán: 1.5 km W of exit to El Sauz on México Hwy. 98 (19.251908°N, 103.594542°W), 1042 m elev. 28 May 2004. UTADC 1034. Municipality of Manzanillo: 1 km SW Tepehuajes (Puertecito de Lajas) on México Hwy. 98 (19.135838°N, 104.12384°W), 430 m elev. 11 September 2006. UTADC 1035. These records fill a large distributional gap between SW Jalisco and central Guerrero (Kofron 1988). Both specimens were found DOR in tropical deciduous forest.
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