NATURE NOTES

Amphibia: Anura

***Incilius occidentalis* (Camerano, 1870). Maximum elevation.** The Pine Toad, *Incilus occidentalis* (Bufonidae), is endemic to Mexico and is known from numerous localities in the states of Aguascalientes, Colima, Durango, Estado de México, Guanajuato, Guerrero, Hidalgo, Jalisco, Michoacán, Morelos, Nayarit, Oaxaca, Puebla, Querétaro, San Luis Potosí, Sinaloa, Tlaxcala, Veracruz, and Zacatecas, and occurs in a wide variety of habitats, including oak and pine-oak forests, scrublands, arid and semi-arid areas, and cloud forest, at elevations from 150 to 2,670 m (Vázquez-Díaz and Quintero-Díaz, 1997; 2005; Lemos-Espinal and Dixon, 2013, 2016; Ramírez-Bautista et al., 2014; Santos-Barrera, 2014). In the state of Aguascalientes, specimens have been reported at elevations from 1,560 m to 2,370 m (McCranie and Wilson, 2001).

On 14 July 2017 at 1602 h, during a rainy day, two of us (GEQD, CCF) found a female *I. occidentalis* (total length = 74 mm; body mass = 121.5 g) under a rock in oak-pine forest at an elevation of 2,770 m in the Sierra Fría, Municipio de San José de Gracia, Aguascalientes (22.229874°N, -102.634953°W; WGS 84; Fig. 1). The toad was collected and photographed, and then released. A photo voucher of this individual is deposited in the University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8934). This voucher represents the highest known elevation for this species in the state of Aguascalientes, as well as for its entire range. Our record increases the known elevation of *I. occidentalis* by 100 m (Lemos-Espinal and Dixon, 2013; 2016), and confirms the presence of this species in pine-oak forest in the state of Aguascalientes.

Fig. 1 An *Incilius occidentalis* (UTADC-8934) from the Sierra Fría, Aguascalientes, found at an elevation 2,770 m, which represents the maximum known elevation for this widespread species. © Carolina Chávez-Floriano

Acknowledgments.—We thank the personnel involved with the project *The Herpetofauna of Aguascalientes, México*, and also are indebted to Roberto Roque-Lozano and César Omar-Trujillo for field assistance, and Carl J. Franklin for providing the photo voucher number. The specimen was handled under scientific permit number SGPA/DGVS/030709/16, issued by the Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT).

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***Lithobates forreri* (Boulenger, 1883). Diet.** Forrer's Leopard Frog, *Lithobates forreri*, is a large ranid (females to 110 mm) wit a distribution restricted to major rivers and swampy areas along the Pacific versant of Mexico from central Sonora and southwestern Chihuahua southward to west-central Costa Rica, at elevations from sea level to 1,300m (Frost and Bagnara, 1976; Savage, 2002; Frost, 2017). Although this common species is rather widely distributed, little information is available on its diet. Lemos-Espinal et al. (2007) suggested that it probably feeds on small invertebrates. Fishing spiders of the genus *Dolomedes* (family Pisauridae) are large and somewhat robust, and usually are encountered near permanent bodies of water where they forage along the surface aided by the hairs on the ventral surface of their body, which are coated with hydrophobic substances; at least three species (*D. holti*, *D. triton*, and *D. vittatus*) are found in Mexico (Carico, 1973; CONABIO, 2008).

On 11 May 2017 at 2042 h, at Rancho Ecoaldea, Ojo de Cielo, San Blas, Nayarit, Mexico (21.577007°N, -105.060498°W; WGS 84; elev. 482 m), one of us (JALB) found a young *L. forreri* foraging along the edge of a pool of water within in a dry stream in tropical deciduous forest. The frog detected the moving spider, which also appeared to be foraging along the rocks surrounding the puddle, and proceeded to prey on the spider. Soon after we captured the frog it regurgitated its prey, which we identified as a *Dolomedes* sp. (Fig. 1); we released the frog after taking the photograph. We observed several other spiders of what appeared to be the same species in the immediate area.

Fig. 1. A *Lithobates forreri* with the legs of its prey protruding from its mouth (left), and the regurgitated fishing spider, *Dolomedes* sp. (right). © Jesús A. Loc-Barragán

Acknowledgments.—We thank Jorge L. Escamilla-Dimas for field assistance.

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***Rheohyla miotympanum* Cope, 1863. Predation.** Spiders are important predators of anuran amphibians. Almost 48% of the reports of invertebrates preying on amphibians pertain to spiders (Toledo, 2005), and thus arachnids not only are prey but also competitors for some anurans (Wells, 2007). In the Neotropics, some of the principal families of spiders that that prey on anurans are the Pisauridae, Lycosidae, and Ctenidae (Toledo, 2005), and their reported prey mostly are frogs of the families Leptodactylidae (Barbo, et al., 2009), Craugastoridae (Zumbado et al., 2009; Aguilar-López et al., 2014; Jablonski, 2015), and Hylidae (Brasileiro and Oyamacuchi, 2006; Ugarte and Briggs, 2007; Jansen and Schulze, 2008; Maffei et al., 2014), which are some of the most diverse families in the Americas.

The Small-eared Treefrog (*Rheohyla miotympanum*) is a hylid frog endemic to Mexico, with a wide distribution on the Atlantic slope ranging from the highlands of Nuevo León and Coahuila to Guanajuato, Hidalgo, Veracruz, Oaxaca, and central Chiapas, at elevations from 100 to 2,280 m (Duellman, 2001). This species often is abundant in modified habitats, including shaded coffee plantations and cattle pastures (Pineda and Halffter, 2004). Two records of invertebrates preying on *R. miotympanum* are available, and both report water bugs (Belostomatidae) as the predators (Pineda, 2003; Hernández et al., 2012).

On 19 August 2014 at 2330 h, during fieldwork at Zona de Protección de Flora y Fauna Santa Gertrudis (19.84306°N, 96.57306°W; WSG 84; elev. 470 m), Municipio de Vega de Alatorre, Veracruz, Mexico, in a patch of secondary vegetation within tropical rainforest, we observed an adult male *R. miotympanum*, 23 mm in snout–vent length (SVL), which had been captured by a young Tiger Wandering Spider, *Cupiennius salei* (Araneae: Ctenidae). The spider was perched on a climbing plant about 50 cm above the ground and was holding the frog with its chelicerae, which had pierced the ventral portion of the pelvic region of the frog (Fig. 1). This observation represents the first report of a spider preying upon *R. miotympanum*. In the study area *R. miotympanum* is an abundant species in secondary vegetation, as we recorded about 60 individuals during 3 person-hours of sampling effort. *Rheohyla miotympanum* likely is an important component of the food web in this area, and C. *salei* appears to participate in regulating the population of this hylid.

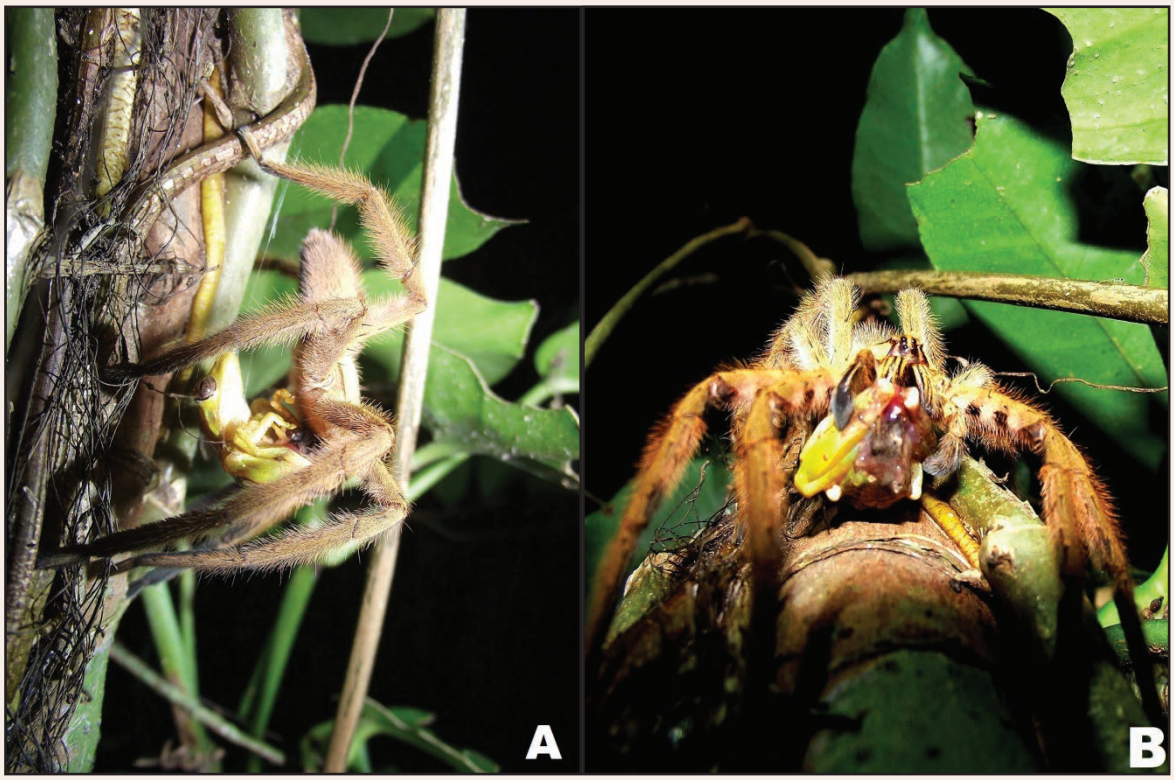

Fig. 1. Lateral (A) and frontal (B) views of a *Cupiennus salei* feeding on a *Rheohyla miotympanum* at Zona de Protección de Flora y Fauna Santa Gertrudis, Municipio de Vega de Alatorre, Veracruz, Mexico. © Arístides García-Vinalay

Acknowledgments.—We thank Raziel Lucio for identifying the spider, Ricardo Luría-Manzano, José Luis Aguilar-López, and Louis W. Porras for providing helpful comments on this note, the Hernandez-Ochoa foundation for their kindness during our fieldwork in the reserve. Our fieldwork was supported with funds from the strategic project "Refaunación de Áreas Naturales Protegidas en el Estado de Veracruz" No. 2003530908. Permits for this study were issued by the Dirección General de Vida Silvestre of the Secretaría de Medio Ambiente y Recursos Naturales (collecting permit numbers: SGPA/DGVS/034444/15).

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Reptilia: Crocodylia

***Crocodylus acutus* (Cuvier, 1807). Diet.** The American Crocodile, *Crocodylus acutus*, is widely distributed in coastal and lowland wetlands in the northern Neotropics (Thorbjarnarson et al., 2006). This species feeds on a broad array of food items, including fruits, arthropods, crustaceans, fishes, amphibians, reptiles, birds, and both terrestrial and marine mammals (Casas-Andreu and Barrios-Quiroz, 2003; Nabhan, 2003; Villegas and Schmitter-Soto, 2008; Platt et al., 2013a, b, 2014; Beltrán-López, 2015; Cupul-Magaña et al., 2015, 2016; Acosta-Chaves et al., 2016). To our knowledge, the following 13 species of birds (classified in seven Orders) have been reported in the diet of *C. acutus*: Anseriformes: *Anas discors*; Charadriiformes: *Jacana spinosa*; Columbiformes: *Zenaida macroura*; Gruiformes: *Rallus longirostris*; Pelecaniformes: *Bubulcus ibis*, *Butorides virescens*, *Eudocimus albus*, *Nyctanassa violacea*, and *Pelecanus occidentalis*; Phoenicopteriformes: *Phoenicopterus ruber*; and Suliformes: *Anhinga anhinga*, *Phalacrocorax auritus*, and *P. brasilianus* (Cupul-Magaña et al., 2015). In this note, we present photographic evidence of a *C. acutus* preying on a young Great-tailed Grackle, *Quiscalus mexicanus* (Gmelin, 1788), a social bird (Order Passeriformes) with a distribution extending from southern Canada to northern South America (Johnson and Peer, 2001).

On 16 May 2017, at the Marina Vallarta Club de Golf, Puerto Vallarta, Jalisco, Mexico (20°40'00"N, 105°15'50"W; datum WGS 84; elev. < 4 m), one of us (FMC) observed and photographed an adult *C. acutus* (total length ≤ 1.8 m; individual not captured or sexed) eating a young *Q. mexicanus* (Fig. 1) that presumably had fallen from its nest and died. The bird likely was consumed by the *C. acutus* shortly thereafter, because the bird showed no signs of decomposition. This observation is another example of opportunist feeding behavior in wild *C. acutus*.

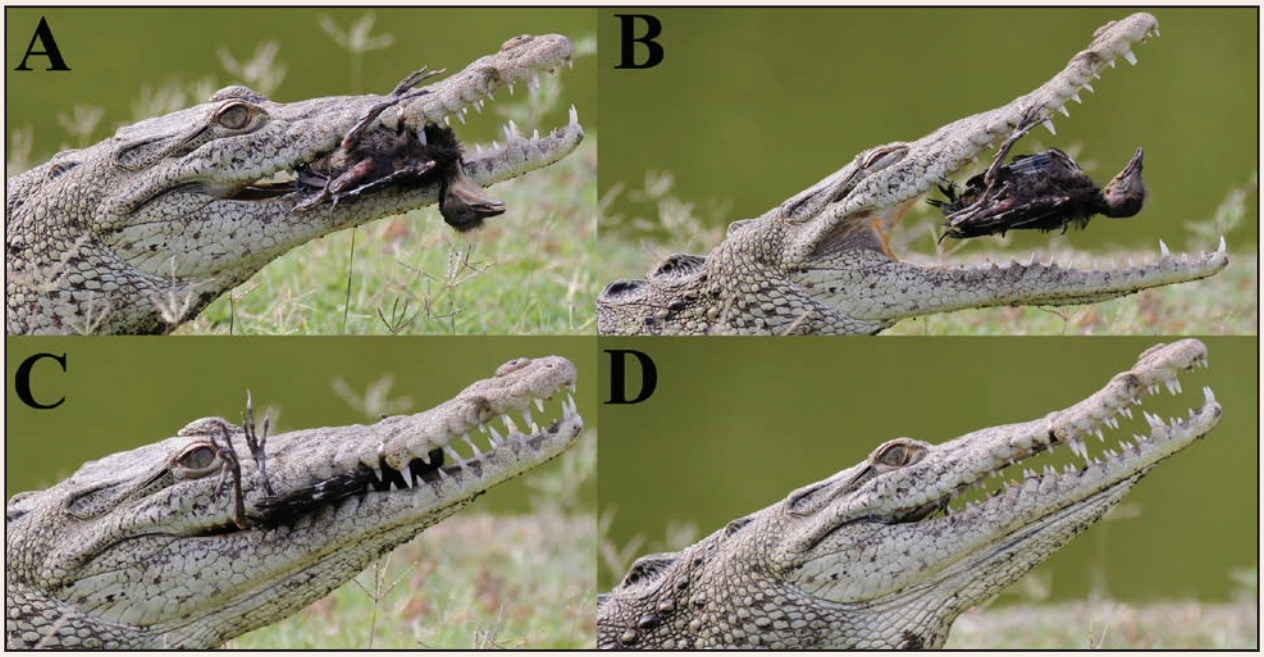

Fig. 1. Predation of a young *Quiscalus mexicanus* by *Crocodylus acutus* in Puerto Vallarta, Jalisco, Mexico. Sequence of events: (A) the corpse is collected; (B, C) the bird is thrown into the air and placed in position for swallowing; and (D) the bird is swallowed. © Frank Mc Cann

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***Crocodylus acutus* (Cuvier, 1807). Ectoparasitism.** Ectoparasites recorded in crocodylians include ticks, leeches (Montague, 1984; Rainwater et al., 2001; Huchzermeyer, 2003; Padilla-Paz, 2008; García-Grajales and Buenrostro-Silva, 2011; Charruau et al., 2017a; Tellez et al., 2017), barnacles (Monroe and Garrett, 1979; Cupul-Magaña et al., 2011; Nifong and Frick, 2011; Escobedo-Galván et al., 2012; Elsey et al., 2014), and sea anemones (Charruau and González-Muñoz, 2016). The available information on interactions between crocodylians and insects (as ectoparasites), however, remains limited.

The27 crocodylian skin is an important part of the body's defense mechanism (Elkan and Cooper, 1980; Alderton, 1998), but small animals sometimes can remain and/or successfully penetrate this protective cellular barrier. Such is the case with capillarid worms (Charruau et al., 2017b), as well as dipteran species of the family Tabanidae, where female flies generally are large-bodied blood feeders that can attack many vertebrates, including crocodylians, by using their proboscis to pierce the skin (Tellez, 2013; Karolyi et al., 2014).

Some species of tabanids has been linked to the mechanical transmission of parasites in crocodiles and caimans (Hoare, 1929; Barros, 1996; Ferreira et al., 2002; Onmaz et al., 2013). Fairchild (1986) summarized some data of tabanid hosts preferences in Panama, and indicated dead caimans as hosts of *Fidena flavipennis*. Additionally, Tellez (2013) listed some species of the genera *Catachlorops*, *Diachlorus*, *Lepiselaga*, *Phaeotabanus*, *Stenotabanus*, and *Tabanus* parasitizing caimans. Nevertheless, we are not aware of any records of species of *Esenbeckia* feeding on crocodiles, or records of any tabanids feeding on crocodiles in Mexico.

Herein we present the first report of tabanid fly (or horsefly) *Esenbeckia* sp., a diverse genus of the subfamily Pangoniinae in Mexico (Ibáñez-Bernal and Coscarón, 2000), biting an American Crocodile (*Crocodylus acutus*), a widely distributed species in coastal regions of the northern Neotropics (Thorbjarnarson, 1989).

On 1 August 2016, at the Marina Vallarta Club de Golf, Puerto Vallarta, Jalisco, Mexico (20°39'58"N, 105°15'50"W; datum: WGS 84; elev. < 3 m), one of us (FMC) observed and photographed a juvenile *C. acutus* (total length ≤ 1 m; individual not captured or sexed) as it was being bitten by a tabanid fly, *Esenbeckia* sp. (Fig. 1A). The horsefly landed on the upper portion of the crocodile's back and bit between the scales (Fig. 1B). We presume this to be a blood feeding behavior used by the tabanid fly on *C. acutus*; the bite perhaps is painful or extremely unpleasant for the crocodile, because the *C. acutus* spread its front limbs and directed them toward its back in an effort swat the horsefly (Fig. 1C). Future research on the interactions between tabanids and crocodiles is necessary to determine the frequency in which the crocodiles are parasitized by biting dipterans, and whether these bites can affect the health of the crocodiles.

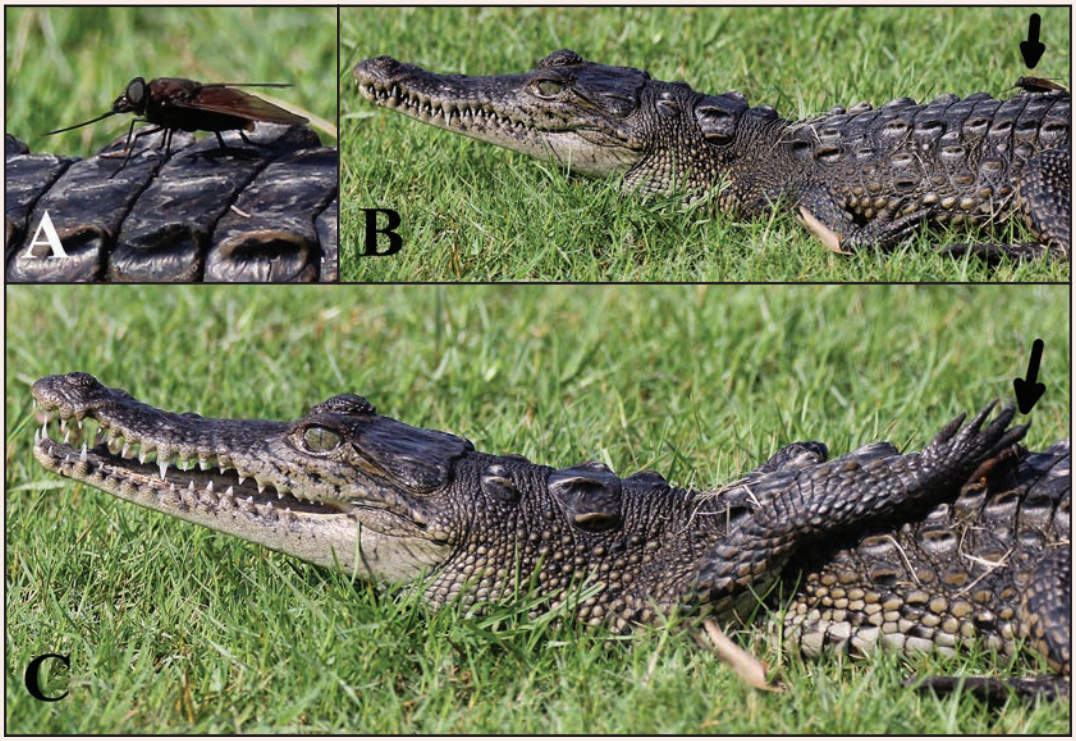

Fig. 1. Sequence of events: **(**A) Close-up of Tabanid fly *Esenbeckia* sp.; (B) the fly after landing on the upper portion of the back of a *Crocodylus acutus* (see black arrow); and (C) the crocodile reacts by using its front limbs in an attempt to swat the horsefly (see black arrow). © Frank Mc Cann

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Reptilia: Squamata (lizards)

***Ctenosaura similis* (Gray, 1830). Predation.** The Black Spiny-tailed Iguana, *Ctenosaura similis,* is a large lizard (maximum snout–vent length = 489 mm) that occurs from the Isthmus of Tehuantepec (central Tabasco on the Atlantic versant and central Oaxaca on the Pacific versant), Mexico, southward across Central America (except highland areas and very humid regions), including some offshore islands, to central Panama, at elevations from sea level to 1,320 m elevation (Savage, 2002; Köhler, 2008); it also has been introduced in the islands of San Andrés and Providencia, Colombia, and in Florida, United States (Dunn and Saxe, 1950; Meshaka et al., 2004. Although this species is found in various types of habitats, on the Pacific versant of Mesoamerica it occurs primarily in wooded or semi-forested habitats in xeric environments (Mora, 2010). Known predators of *C. similis* include the snakes *Agkistrodon howardgloydi* (Solórzano et al., 1999), *Boa imperator* (Bakkegard and Timm, 2001), *Conophis lineatus* (Hernández-Gallegos et al., 2008), *Crotalus tzabcan* (Heimes, 2016); *Leptodeira frenata* (Barbour and Cole, 1906); *Leptophis mexicanus* (Platt et al., 2016), *Loxocemus bicolor* (Mora, 1987), *Oxybelis fulgidus* (Henderson, 1982; Henderson and Binder, 1980); *Trimorphodon biscutatus* (Savage, 2002); and the mammals *Dasypus novemcinctus* (Mora, 2010) and *Felis rufus* (Engeman et al., 2007). Additionally, this species has been reported to engage in cannibalism (Fitch and Henderson, 1978; Mora, 1991; Mora et al., 2015). Savage (2002: 436) noted that individuals of *C. similis* are "heavily preyed upon by hawks, jays, basilisks, and probably small carnivorous mammals," but did not provide additional information. Herein, we report a new avian predator on *C. similis* in southeastern Mexico.

On 23 July 2017 at 1037 h, two of us (FOL and SML) observed a Turquoise-browed Motmot (*Eumomota superciliosa*) preying on a hatchling *C. similis* (Fig. 1) at Cuadrángulo de las Monjas, Municipio de Uxmal, Yucatán, Mexico (20.361600°N, -897707°W), elev. 59 m. The event took place along the edge of a rock wall, in what used to be the basement of an old historic building. At the time of the observation, the bird was holding and forcefully striking the lizard against the wall, and then flew away with its prey. To the best of our knowledge, this is the first published report of *E. superciliosa* preying upon *C. similis*.

Fig. 1. A Turquoise-browed Motmot (*Eumomota superciliosa*) preying on a hatchling Black Spiny-tailed Iguana (*Ctenosaura similis*) in Cuadrángulo de las Monjas, Municipio de Uxmal, Yucatán, Mexico. © Fernando Ortiz-Lachica

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***Gerrhonotus parvus* Knight and Scudday, 1985. Malformation.** The Pigmy Alligator Lizard, *Gerrhonotus parvus*, is a relatively small anguid in which the holotype, an adult female, measured 152 mm in total length (TL): the snout–vent length (SVL) = 55 mm + the tail length (T_aL) = 97 mm (Knight and Scudday, 1985). This species can be differentiated from its congeners by a combination of the following characters: small adult size; smooth dorsal scales; nasals in contact with rostral, second primary temporal in contact with fifth medial supraocular; subocculars separated from lower primary temporal by an upper labial; and wide pale crossbands on the tail (Knight and Scudday, 1985). The scalation characters of the specimens we collected (see below) are consistent with those reported for this species.

Gerrhonotus parvus is known to occur in the Sierra Madre Oriental in the state of Nuevo León, Mexico, and originally was reported from the municipality of Galeana in a transition zone between pine forest (*Pinus arizonica*) and open gypsophyllous scrub at an elevation of 1,650 m (Knight and Scudday, 1985). Subsequently, Banda-Leal et al. (2002) reported a specimen from Cañon de San Isidro in the municipality of Santiago, which is located northwest of the type locality. This canyon lies at an elevation of ca.1,600 m, and runs east to west; the canyon is characterized by steep limestone walls covered with agaves (*Agave lecheguilla*, *A. bracteosa*), sotol (*Dasylirion* sp.), and scrub oak (*Quercus* sp.) and contains intermittent pools of water. The floor of the canyon contains piles of leaf litter and scattered large rocks (Banda-Leal et al., 2002; Bryson and Lazcano, 2005). Conroy et al. (2005) reported another specimen of *G. parvus* from between the two areas indicated above, from Cañon de Mireles in the municipality of Los Rayones; the habitat in this area is similar to that of Cañon de San Isidro but the specimen was found at an elevation of 900 m, the lowest recorded for this species. Banda-Leal et al. (2014) later reported another specimen, from Cañon de Reflexiones in the municipality of Santa Catarina, which lies northwest of Cañon de San Isidro, and again in a similar habitat. *Gerrhonotus parvus* currently is protected by national and international laws. In Mexico, this species has been afforded a special protection status by SEMARNAT (2010), and at the international level IUCN has placed this species in the Endangered category (Canseco-Márquez and Mendoza-Quijano, 2007). Additionally, Johnson et al. (*This Issue*) determined an Environmental Vulnerability score of 17 for *G. parvus*, which placed it in "priority level one" (the highest of 19 levels) for determining the degree of attention endemic herpetofaunal species in Mexico should be afforded for future conservation planning.

From 2012 to 2015, we conducted intensive surveys during which we collected specimens and gathered data on *G. parvus* in the four above-mentioned localities. During our surveys we collected and obtained general morphological and ambient data on *G. parvus* at the following localities: Galeana (6 individuals), Cañon de San Isidro, Santiago (46), Cañon de Mireles, Los Rayones (1), and Cañon de Reflexiones in Santa Catarina (1).

On 16 June 2014 at 1230 h, we collected a juvenile female *G. parvus* in Cañon de San Isidro, Santiago, Nuevo León (25.380878°N, -100.309179°W; WGS 84; elev. 1,720 m; Figs. 1, 2), as it was moving in leaf litter along a ridge in the canyon. The morphological characteristics of the individual at the time of collection were as follows: SVL = 53.32 mm; T_aL = 48.69 mm; TL = 102.01 mm; and body mass = 2.04 g. We also recorded the following temperature and humidity data: body temperature (BT) = 26.5°C; microhabitat temperature (MT) = 22.3°C; and ambient humidity (AH) = 71%. The individual has been maintained in captivity for 3 years as part of our live collection, and presently its morphological characteristics are as follows: SVL = 64.03 mm; T_aL = 68.63 mm; TL = 132.66 mm; and body mass = 5.03 g. After having collected or observed 54 individuals of *G. parvus*, herein we document the first malformation we have observed in this species.

When the juvenile female *G. parvus* was collected, it was missing a hind limb. In order to determine if this was a congenital deformity or if the limb was lost as a result of a predatory event, we took a radiograph (X-Ray Machine Model DM-100P Heyday) and closely examined the area with the missing limb. The results show a low radiopacity zone in the right coxofemoral articulation, which indicates no evidence of bone formation for this limb, and thus we diagnosed this as a congenital defect (i.e., the individual was born without the limb; Fig. 3).

Abnormalities or malformation in reptiles have been reported in several species.

Fig. 1. An adult female *Gerrhonotus parvus* found with a missing hindlimb at Cañon de San Isidro, Santiago, Nuevo León. © Daryne Berenice Esquivel-Arévalo

Fig. 2. A road cutting through the habitat where the individual of *Gerrhonotus parvus* was found. © Javier Banda-Leal

Caldwell and Hong (2012) reported on a *Gekko japonicus* with multiple morphological abnormalities in the left side of its body, where the left forelimb appeared to be hypoplastic and reduced in size, with the hand containing only two digits and a partial third, and Carbajal-Márquez and González-Saucedo (2012) documented finding an adult *Gerrhonotus liocephalus* with six digits on each of its rear limbs. In reptiles, an overall reduction in the proportions of limbs has been observed when incubating eggs are exposed to extreme ranges in temperature, which affects the developing embryos and can result in various types of deformities, including a malformation of the eyes and limb anomalies (Deeming and Ferguson, 1991; Mader, 1996). Environmental contamination also might be linked to deformities in reptiles (Khan and Law, 2005), including a malformation of the eyes and limbs (Bell et al., 2006). Genetic factors are also known to be responsible for anomalies seen in reptiles (Olson et al., 1996; Velo-Anton et al., 2011). Other abnormalities, known as kyphosis and scoliosis, and malformations of the vertebral column, have been

reported in the following lizards: *Sceloporus undulatus* (Mitchel and Georgel, 2005); *Liolaemus petrophilus* (Frutos et al., 2006); *Cyclura cychlura* (Owens and Knapp, 2007), *Japalura swinhonis* (Norval et al., 2010); *Sceloporus marmoratus* (Chavez-Cisneros et al., 2012); *Liolaemus koslowskyi* (Avila et al., 2013); and *Sceloporus vandenburgianus* (Valdez-Villavicencio et al., 2016). All of these animals were adults that reached adulthood with these birth defects. Other types of malformations of the body also have been documented. Ljustina and Stroud (2016), reported on an individual of *Anolis* (= *Ctenotus*) *cristatellus* in which the external tympanum was absent on one side of the head, and skin had covered the ear opening. Campos-Gomides et al. (2014), reported finding a *Plica plica* with a filiform appendix in gular region, a *P. umbra* with reduced or nearly absent ear openings, and another *P. umbra* with a symmetrical cavity on each of the first infralabial scales. In this note we provide the first report of a congenital abnormality in *G. parvus*.

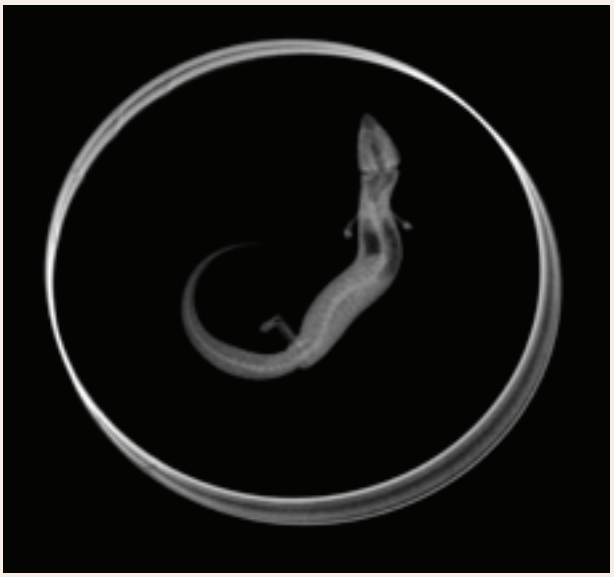

Fig. 3. An adult female *Gerrhonotus parvus* found with a missing hindlimb, showing a low radiopacity zone in the right coxofemoral articulation. Radiograph courtesy of Manuel Omar Serna.

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***Hemidactylus frenatus* Duméril & Bibron, 1836. Tail bifurcation.** Caudal autotomy is a defensive mechanism mainly used by salamanders and lizards, and occurs by the contraction of the tail muscles and the detachment part of the tail in response to a predatory attempt (Bateman and Fleming, 2009; Vitt and Caldwell, 2009). In lizards, this mechanism has been documented in 13 families, but it can be absent in certain species (Bateman and Fleming, 2009). Most reports on tail malformations are in lizards capable of autotomy and usually are associated with regeneration failures of the extremity, as opposed to congenital malformations (Conzendy et al., 2013). The presence of two or even three tails generally occurs when the tail is damaged and thus cannot be completely autotomized, and at this point an additional tail (or tails) begins to develop (Ananjeva and Danov, 1991).

The Common House Gecko, *Hemidactylus frenatus*, is an exotic species capable of using this defensive mechanism. Historically, the introduction of *H. frenat*us to areas outside of its natural range occurred so early and extensively that the exact natural distribution of this species is unclear, but its natural range presumably included an area extending from Bangladesh to the Philippines (Farr, 2011). In Mexico, this species has been recorded in 21 of the 31 states in the country, primarily along the coastal regions but also in the interior (Schmidt-Ballardo et al., 1996; Casas-Andreu et al., 1998; Farr, 2011; Bañuelos-Alamillo et al., 2016). Although *H. frenatus* has a broad distribution, relatively little information is available on its ecology, and specifically on tail malformations. Although bifurcated tails have been reported in *H. frenatus* (Chan et al., 1984; Heyborne and Mehan, 2017), herein I report the first instance of this condition in individuals from Mexico, and also present photographs of different types of tail bifurcations in this species.

In August of 2016 from ca. 2000 to 2300 h, in Municipio de Minatitlán, southeastern Veracruz, Mexico (17°59'54" N, 94°33'89"W; WGS 84; elev. 16 m), I collected 74 individuals of *H. frenatus* in a small portion (0.07 km^2) of this urban area. The tail of four of these individuals was bifurcated, but I only photographed three of the geckos (Fig. 1). Each of the individuals showed a different type of bifurcation: in the first the tail was fully regenerated, with the bifurcation present near the tip (Fig. 1A); in the second a malformation was present at the point of bifurcation (Fig. 1B); and in the third two fully regenerated tails were present, which were fused along most of the length of the tail but separated near the tip (Fig. 1C). The presence of multiple tails in an individual could affect its fitness in negative ways, because the tail plays an important role in locomotion and can affect such activities as foraging, mating, and the ability to escape from predators (Passos et al., 2014).

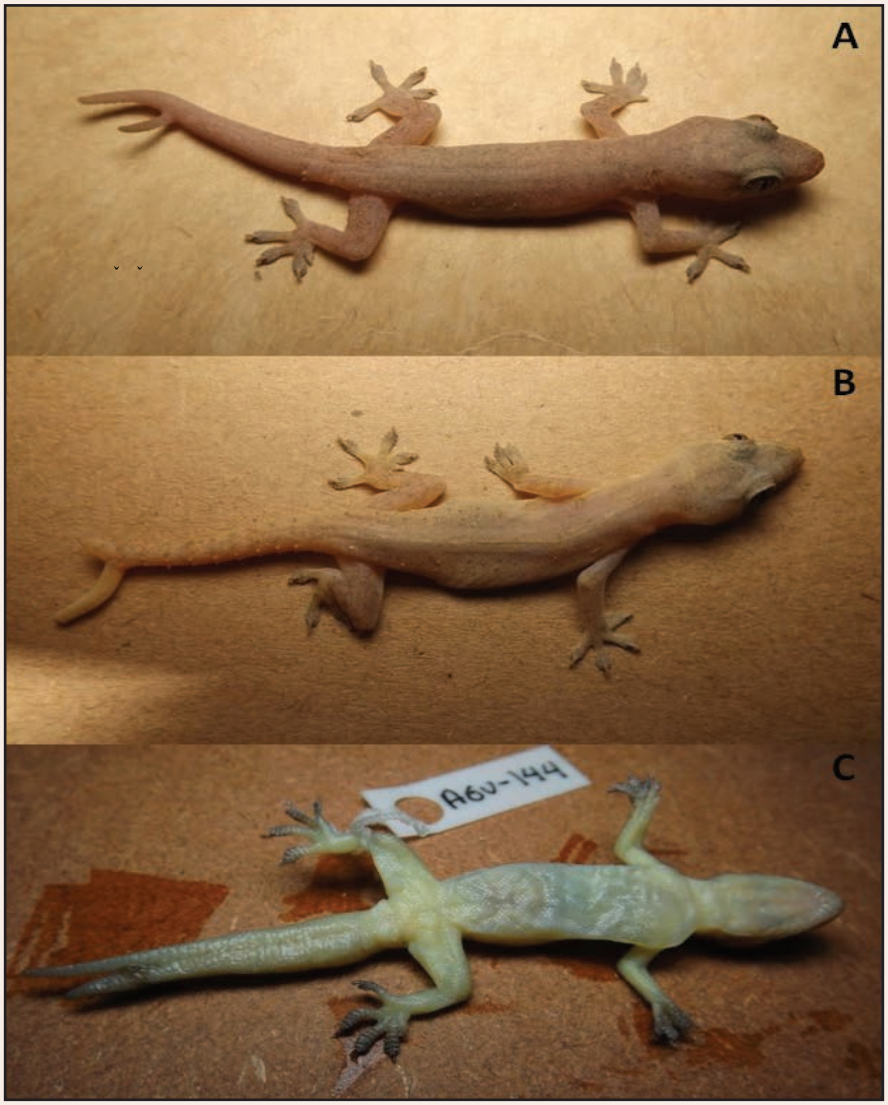

Fig. 1. Three individuals of *Hemidactylus frenatus* in this report show different types of tail bifurcations.
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Nocturnal activity facilitated by artificial lighting in the diurnal *Norops sagrei* (Squamata: Dactyloidae) on Isla de Flores, Guatemala

The Brown Anole, *Norops sagrei* (Duméril & Bibron, 1837), is native to Cuba, the Bahamas, and some adjacent islands in the Caribbean (Schwartz and Thomas, 1975; Losos, 2009). This species is well known as a successful invader (Wilson and Porras, 1983; Kolbe et al., 2004; Kraus, 2009; Tan and Lim, 2012; GISD, 2017), and its distribution worldwide continues to increase. Its occurrence in Mexico and parts of Central America is well documented, and in Guatemala this species has been reported to inhabit the northern lowlands in the department of Petén (Stuart, 1955).

The origin and relationships of *N. sagrei* throughout its range are a topic of great interest and controversy, with the commonly referred to "*N.* (or *Anolis*) *sagrei*" potentially forming a species complex. Numerous publications have addressed or at least discussed the variation and distinctness of *N. sagrei* populations (Lee, 1992; Lee, 1996; Nicholson et al. 2012; McCranie and Kohler, 2015; González-Sánchez et al., 2017), yet the origin and validity of populations in Guatemala remains uncertain. Like many, we hesitate to accept the separation of the entire Central American population as *Norops* (*Anolis*) *s. mayensis* (Smith and Burger, 1949), before a thorough molecular analysis of the populations in this region is conducted. Stuart (1955: 22) noted that the specimens he examined from British Honduras (Belize) fell "in line with typical material rather than with "*mayensis*," and postulated that the

observed variation within the populations along the Caribbean coast of Central America likely is dependent upon the source and nature of the parent population from which they stemmed. Like Gonzáles-Sánchez (2017) decided in a study on the herpetofauna of the Yucatan Peninsula, for the purposes of this note we also consider *N. sagrei* at this locality to be an introduced species.

We made the following observations on Isla de Flores, a small island located in Lago Petén Itzá in the department of Petén. Although the surrounding mainland contains some forested areas, Isla de Flores has undergone extensive urbanization and the natural vegetation no longer is present. *Norops sagrei* is opportunistic and largely insectivorous in its feeding habits, and its diet consists of small arthropods such as flies, crickets, grasshoppers, caterpillars, moths, annelids, and mollusks (Tan and Lim, 2012; Campbell, 2002). This species also has been reported to consume smaller lizards, including its own species, and sympatric anole competitors (Losos et al., 1993; Campbell, 2000; Gerber and Echternacht, 2000; Nicholson et al., 2000), and its diverse diet likely contributes to its ability to thrive and exploit disturbed environments, and thus consideration as a "habitat generalist" (Campbell, 2002).

Herein, we document nocturnal activity and utilization of an artificial light source by *N. sagrei* on Isla de Flores, Departamento de Petén, Guatemala (16°55'46"N, 89°53'29"W; elev. 127 m). On 22 May 2017 from 1930 to 2340 h, we observed five individuals of *N. sagrei* foraging amongst planted decorative vegetation surrounding three artificial lights at the San Telmo Hotel (Fig. 1). The site of these observations was highly disturbed and urbanized, with plenty of anthropogenic disruption due to human traffic. At ca. 2000 h, we observed males and females of *N. sagrei* competing for position around the artificial light source. At 2042 h, we observed a male catching and consuming a moth (Lepidoptera) that had been attracted by the artificial light source. Apparently, artificial lights can facilitate nocturnal activity in *N. sagrei*, and even aid in procuring food for this diurnal species. Additionally, on 27 May 2017, we observed a large population of *N. sagrei* active throughout the day (ca. 0600–1700 h) and late at night (ca. 2100–2300 h) at Los Amigos Hostel. Nocturnal behavior by *N. sagrei* at these sites was common, and the many artificial lights located in the planted outdoor premises allowed for an extended period of activity and the opportunity for these lizards to feed on insects attracted to the light sources (Perry et al., 2008). Notably, we did not observe the presence of *Hemidactylus frenatus* (Asian House Gecko) at either of these localities; it is a common and invasive species often associated with the use of artificial lights in the region.

Anoles are almost exclusively diurnal and exceedingly visually oriented (Fleishman, 1992), so documentation of nocturnal activity and the use of a "night-light niche" (Garber, 1978) within this group is considered rare. Previously, such behavior has been reported in anoles (Wilson and Porras, 1983; Schwartz and Henderson, 1991; Meshaka et al., 2004; Perry et al., 2008; Powell, 2015), and specifically for *N. sagrei* in Mexico (Badillo-Saldaña et al., 2016), but to the best of our knowledge it has not been reported in Guatemala. The occurrence of such nocturnal activity is unusual and remains poorly documented. Thus, we hope this short note provides further confirmation and recognition of this urban behavior in *N. sagrei,* while highlighting the adaptive potential of this species to exploit new resources and available niches.

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***Sceloporus mucronatus* Cope, 1885**. **Endoparasites.** *Sceloporus mucronatus*, a Mexican endemic, is found in primary and secondary open montane oak woodland, pine-oak forest, and pine forest, as well as in agricultural areas with rock crevices, in the states of Hidalgo, Mexico, Puebla, Tlaxcala, Veracruz, Guerrero, and Oaxaca, at elevations from 1,750 to 3,700 m (Canseco-Márquez et al., 2007; Lemos-Espinal and Dixon, 2016; Ramírez-Bautista et al., 2014). To date, seven records of endoparasites in *S. mucronatus* have been reported—of cestodes (*Oochoristica scelopori*) and six of nematodes (*Ascarops* sp., *Pharyngodon* sp., *Physaloptera retusa*, *Spauligodon giganticus*, *S. oxcutzcabiensis* and *S. similis*)—from individuals collected in Mexico City, Puebla, and unidentified locations (Paredes-León et al., 2008). Herein we report new records for two species of nematodes in this species.

We examined four specimens of *S. mucronatus* collected in March of 2016, two from Cerro las Navajas, Municipio de Singuilucan (20.093978°N; -98.557812°W; elev. 3,069 m; CIB-CH 5108–5109) and two from El Gavillero, Municipio de Huichapan (20.365238°N; -99.555199°W; elev. 2,540 m; CIB-CH 5110–5111). Using standard laboratory techniques, we searched for helminths using a dissecting microscope. We cleared the nematodes in lactophenol, and placed them on a coverslipped microscope slide. We found two species of Nematoda, *Strongyluris similis* and *Spauligodon giganticus*, and deposited the voucher helminths in the Colección Nacional de Helmintos (CNHE), Universidad Nacional Autónoma de México as *S. similis* (CNHE 10454), and *Sp. giganticus* (CNHE 10453, Huichapan; CNHE 10452, Singuilucan).

The *Strongyluris similis* collected in the municipality of Singuilucan is a parasite heteroxeny of different species of Mexican lizards of the genera *Petrosaurus*, *Sceloporus*, and *Urosaurus* (Paredes-León et al., 2008). In Hidalgo, it was reported in *S. jarrovi* and *S. mucronatus* from unknown localities (Goldberg et al., 1996; 2003). This species of nematode is common in the rectum of lizards. Its transmission reveals unusual adaptations for different environments, as it uses cockroaches (including *Blattella germanica*) and larval *Culex* sp. as intermediate hosts (Anderson, 2000). We identified three males of *S. similis* that show a pair of different-sized spicules (right spicule 0.79–0.81 mm long, left spicule 0.75–0.78 mm long), and the caudal extremity shows a caudal ala and a spike. Moreover, it presents seven pairs of lateral pedunculated papillae, three small ventral ones and a sucker in the middle part of the caudal extremity. *Sp. giganticus* is an intestinal parasite reported in *Lepidophyma*, *Petrosaurus*, and *Sceloporus* in Mexico (Paredes-León et al., 2008). In Hidalgo, this parasite was reported in *Lepidophyma gaigeae*, in the municipality of Zimapán, and in *S. jarrovi* from an unknown locality (Goldberg et al., 1996; 2002). Herein we report nematodes collected in two municipalities in Hidalgo, Huichapan and Singuilucan. *Sp. giganticus* has a monoxeny cycle; the infection of this nematode occurs by ingestion of its eggs, and the infection might occur in lizards fewer than two weeks of age (Goldberg and Bursey, 1992). We identified 11 males and 14 gravid females of *Sp. giganticus*. Lateral alae are present and a spicule is absent in males, and in females the alae are absent; gravid females are characterized by a total length of 4.1–6.9 mm and a maximum width of 0.50–0.86 mm, with the vulva situated 0.57–0.66 mm from the cephalic end. The thread-like part of the tail contains 10 small spines; the eggs are oblong and slightly flattened on one side, 0.11–0.12 mm long × 0.03–0.04 mm wide, with a knob on one end. This species had been collected parasitizing *S. minor* in the municipality of Zimapán, Hidalgo (Falcón-Ordaz and Goyenechea, 2016), and also has been found parasitizing *S. mucronatus* in Puebla (Goldberg et al., 2003). For both nematodes, new localities from the states of Hidalgo and Mexico are reported, with *S. mucronatus* reported for the first time in the municipality of Singuilucan, Hidalgo.

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Reptilia: Squamata (snakes)

***Clelia clelia* (Daudin, 1803). Predation on larger prey.** The Common Mussurana, *Clelia clelia*, is a well-known ophiophagous species that uses a combination of envenomation and constriction to subdue its prey (Savage, 2002). Its ability to forage, follow, find by smell, attack, bite, constrict, and swallow its prey has been reported by various authors (e.g., Scott, 1983; Savage, 2002; Solórzano, 2004; Chavarria and Barrio-Amorós, 2014; Timofeevski et al., 2017). What has been not described, however, is how an individual of *C. clelia* can swallow a prey item larger than itself, and herein we report such an event.

On 31 May 2017, after returning from a rainforest walk at Finca Ecoturística La Tarde, near La Palma, Cantón de Osa, Provincia de Puntarenas, Costa Rica (8°34'39.07"N, 83°29'9.66"W; datum WGS 84; elev. 196 m), we observed a red snake in a grassy field saturated with puddles from recent rains. As we approached the snake, we realized that it was a juvenile *C. clelia* in the process of subduing a Spotted Cat-eyed Snake, *Leptodeira polysticta* (Fig. 1). As we came closer, we noticed that the *Clelia* was coiled around the *Leptodeira* but no longer was constricting it, and was searching for the head to start the ingestion process. The *Clelia* apparently was having trouble closing the open mouth of the *Leptodeira*, so after a few minutes it released the head and again constricted the body of its prey, this time managing to insert the entire head of the *Leptodeira* in its mouth (Fig. 2). The *Leptodeira* recently had consumed a prey item (probably a frog), which was moving inside of its body and the snake appeared to be convulsing. After ca. 15 min, during which time the *Clelia* was attempting to properly position the body of the *Leptodeira*, the *Clelia* swallowed the anterior half of its prey rather fast. At that point we realized that the prey was longer and of a similar circumference as that of the predator, and we began wondering how the *Clelia* would be able to ingest such a large prey item? Soon after, however, we began to notice undulating movements along the neck of the *Clelia*,

which continued posteriorly to about midbody, and then the *Clelia* remained motionless for about 10 min (Fig. 3). Subsequently, the *Clelia* began to rotate its body in a circular motion, reminiscent of feeding behavior often seen in crocodiles. Presumably, such behavior assists the predator in the final stages of subduing its prey. Although we didn't have a tape measure to be more accurate, we estimated the total length of the *Clelia* at ca. 50 cm and that of the *Leptodeira* at ca. 65 cm. After a few minutes of observing the rotating movements, along with further ingestion of the prey item, the *Clelia* stopped to rest for ca. 5 min. We then left the scene, but returned 10 min later to find the *Leptodeira* almost totally ingested, with only its tail sticking out of the mouth of the *Clelia*; because the *Leptodeira* was about 30% longer than the *Clelia*, its body became positioned in an "accordion-like" fashion within the *Clelia* (Fig. 4). This "folding" of the prey item was noticeable, especially along the throat region of the *Clelia*. At that point the *Clelia* began showing signs of activity, and while ignoring our presence moved moved away without much difficulty (Fig. 5). Interestingly, the *Leptodeira* was alive during most of the ingestion process, as we observed it barely moving inside the predator. The entire event (from the point in which we began to observe it) lasted ca. 1 h. A video of most of the process can be seen at: https://www.youtube.com/watch?v=D299p3GjgAw.

We were unable to make further observations or to provide an X-ray to determine exactly how the prey item was accommodated inside the body of the predator. Previously, however, X-rays of two species of *Lampropeltis* have shown a larger prey item (snake) within the body cavity, where the prey was positioned in an undulating fashion and the tail was bent in the shape of a "U" in the area of the throat (Ditmars, 1931; Jackson et al., 2004).

Fig 1. A juvenile *Clelia clelia* subdues a larger individual of *Leptodeira polysticta*. After constricting the body and biting it (and presumably injecting its venom), the *Clelia* searches for the head of its prey. © Rémon ter Harmsel

Fig 2. Soon after, the *Clelia* begins to swallow the *Leptodeira*, starting with the head.
© Rémon ter Harmsel

Fig 3. At this point the *Clelia* has swallowed more than one-half of its prey, and stops to rest.
© Rémon ter Harmsel

Fig. 4. After resuming the ingestion process, the *Clelia* undergoes a series of circular rotating movements, perhaps to make sure the *Leptodeira* had died before continuing to ingest the snake. Note the undulating position of the *Leptodeira* within the predator. © Rémon ter Harmsel

Fig 5. After swallowing a prey item larger than itself, the *Clelia* remained motionless for a few seconds and then retreated into the forest.
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***Crotalus scutulatus* (Kennicot, 1861). Diet.** The Mojave Rattlesnake, *Crotalus scutulatus*, is widely distributed in western North America, occurring from the Mojave Desert through the Sonoran and Chihuahuan deserts to central Mexico (Stebbins, 2003). This species can be distinguished from other rattlesnakes by features of color pattern and scalation, and especially by the presence of enlarged plates (scutes) on the head, located between the eyes (Degenhardt, et al., 1996). Other common names for this species include Mohave Rattlesnake, Chiauhcóatl (note: the Náhuatl meaning = female rattlesnake), Víbora de Cascabel (Campbell and Lamar, 2004), Cascabel de Pradera, and Northern Mojave Rattlesnake (Liner and Casas-Andreu (2008).

During the course of field research for the "Temporal and spatial patterns of survival of the grassland specialist genus *Ammodramus* using radio-telemetry during the winter season in the Chihuahuan Desert of Mexico" project, conducted in the Grassland Priority Conservation Area Valle Colombia in northern Coahuila, Mexico, we recorded the predation of a Grasshopper Sparrow (*A. savannarum*) by a *C. scutulatus*. For this study, we had tagged 60 birds with bands and radio-transmitters (Lotek PicoPip Ag379), and monitored them from mid-December of 2016 to mid-March of 2017. The *A. savannarum* involved in the predation event was captured through the use of mist nets on 14 December 2016, in the grazing grassland of El Perdido (28.39143°N, 102.296495°W; datum WGS 84; elev. 1,370 m; Figs. 1, 2). Before releasing the bird, we measured its wing chord length (61 mm), tail length (46 mm), and tarsal length (20 mm), and also recorded its body mass (15.6 g). The bird's age could not be determined, but it was sexed as a female using a tail feather and molecular techniques, as described by Fridolfsson and Ellegren (1999). After following the bird for 16 days, on 1 January 2017 at 1226 h, we detected an immobile signal and observed a *C. scutulatus* (~35 cm total length; Fig. 3) that obviously had swallowed the tagged *A. savannarum*. At the time of this discovery, we determined the temperature as 24.1°C and the relative humidity as 24.6% by using a Kestrel® 4500 pocket weather tracker. The rattlesnake was lying in an area of grassland dominated by *Bouteloua* sp. and *Eragrostris* sp. (Fig. 4). We took advantage of the ingested transmitter and followed the pulses it emitted for 16 days, and checked it every other day between 0800 and 1800 h to verify if the radio-transmitter was still inside the rattlesnake's digestive system. Most of the time we were able to observe the rattlesnake, but on a few occasions we located the signal at the entrance of a burrow, ~5 m from where the snake originally was found. Using the rattlesnake locations and software ArcMap and Hawth's Tools (Beyer, 2006), we calculated a Minimum Convex Polygon (MCP) and defined the rattlesnake's movement area during daytime as 86 m^2 (Fig. 1). In addition to the *C. scutulatus*, during the survey, we observed five other rattlesnakes (individuals of *C. atrox* and *C. scutulatus*).

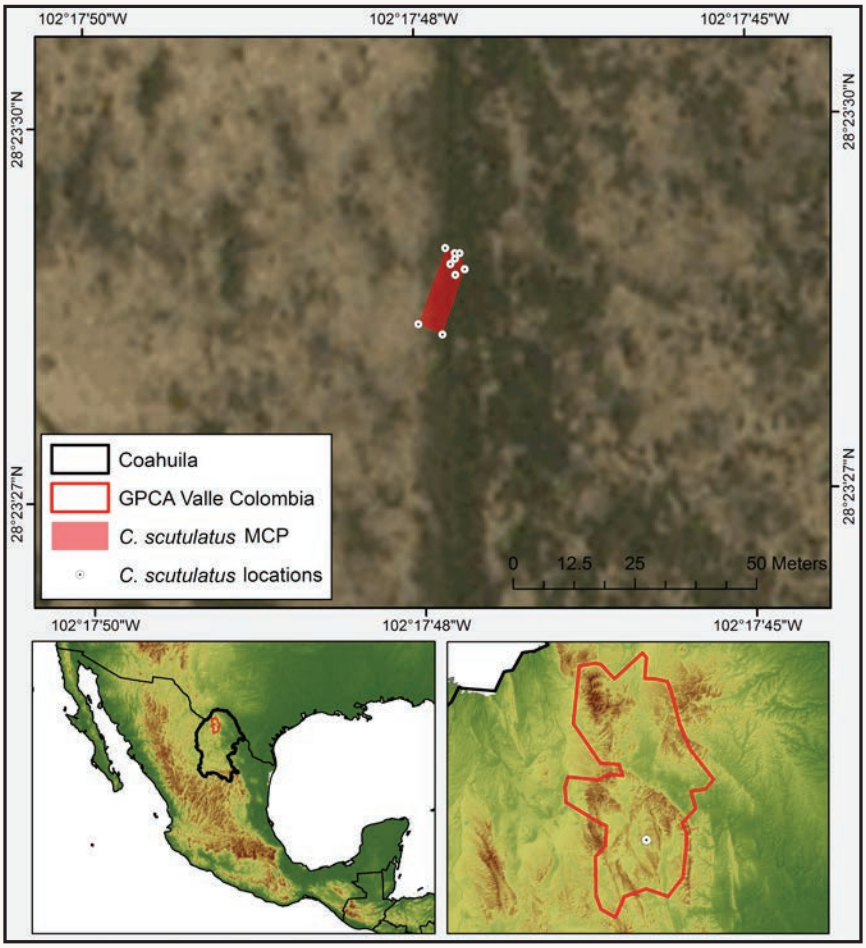

Fig. 1. A map of the study area indicating the locations of *Crotalus scutulatus*. GPCA = Grassland Priority Conservation Area; and MCP = Minimum Convex Polygon. Map by Irene Ruvalcaba-Ortega.

Crotalus scutulatus primarily preys on mammals, but several other types of prey have been reported. Reynolds and Scott (1982) found mammals in 91.7% of the stomachs of the Chihuahua specimens containing food items they examined, including kangaroo rats in 39.6%, pocket mice in 20.8%, white-footed mice in 16.5%, ground squirrels in 10.4%, jackrabbits in 4.2%, and cottontails in 2.1%. Klauber (1972) found mammal remains in 21 specimens of *C. s. scutulatus*, but lizard remains in only two, as well as mammal remains in two *C. s. salvini*. Prey is selected on the basis of size, and that which either is too large or too small is rejected, and potential prey that possibly could harm the snake is not accepted (Reynolds and Scott, 1982). Both live prey and carrion are consumed (Ernst and Ernst, 2012).

Know natural prey include mammals (kangaroo rats [*Dipodomys merriami*, *D. paramintinus*, *D. spectabilis*], pocket mice [*Perognathus flavus*, *P. intermedius*, *P. longimembris*, *P. pencillatus*], white-footed mice [*Peromyscus eremicus*, *P. maniculatus*], ground squirrels [*Ammospermophilus leucurus*, *Spermophilus spilosoma*, *S. tereticaudus*], and hares and rabbits [*Lepus californicus*, *Sylvilagus audubonii*]); bird eggs; reptiles (lizards [*Coleonyx brevis*, *Aspidoscelis tigris*, *Holbrookia* sp., *Phrynosoma platyrhinos*, *Sceloporus* sp., *Uta stansburiana*] and (snakes [*Phyllorhynchus decurtatus*]); amphibians (toads [*Bufo* sp. = *Anaxyrus* sp.], spadefoots [*Scaphiopus* sp., *Spea* sp.] and frogs), and centipedes and and insects (Boone, 1937; Huey, 1942; Kauffeld, 1943; Johnson et al., 1948; Dammann, 1961; Klauber, 1972; Parker, 1974; Reynolds,1978; Cromwell, 1982; Reynolds and Scott, 1982; Tennant, 1984; Lowe et al., 1986; Brown, 1997; Plummer, 2000; Cardwell, 2005, 2006; Ernst and Ernst, 2012). In addition, captives have consumed Brown Rats (*Rattus norvegicus*), House Mice (*Mus musculus*), Woodrats (*Neotoma*

albigula), lizards (*Anolis carolinensis*, *Eumeces* [=*Plestiodon*] *fasciatus*, *Holbrookia* sp., *Uta stansburiana*), and a snake (*Crotalus cerastes*) (Vorhies and Taylor, 1940; Klauber, 1972; Brown and Lillywhite, 1992; Strimple, 1993). Brennan and Holycross (2006) noted that this species feeds on birds, but did not provide additional information. Recently, Cardwell (2013), in his study investigating behavioral changes of *C. scutulatus* in response to drought, did not find avian prey in the diet of this population, only mammals.

Conversely, *A. savannarum* is a species that feeds and nests on the ground, which frequently runs rather than flies when approached (Rising, 1996) and thus it is exposed to many ground predators. The most common predators are snakes, and specifically colubrids, but only during the breeding season (eggs and nestlings; e.g., Giocomo et al., 2008; Renfrew et al., 2003; Sutter and Ritchison, 2005; Vos and Ribic, 2013; and Wray et al., 1982). Even during this stage, however, confirmed records of bird predation are scarce, but include two regurgitated post-fledglings ingested by unidentified snakes (Hovick et al., 2011), as well as four separate attempts to eat this species' nestlings by the Eastern Gartersnake, *Thamnophis sirtalis* (Hovick, 2010). To our knowledge this is the first report of a specific avian species as food item for *C. scutulatus*.

Fig. 2. A Grasshopper Sparrow (*Ammodramus savannarum*) used in this study. © Alexander Peña-Peniche

Fig. 3. The *Crotalus scutulatus* that preyed upon the tagged *Ammodramus savannarum*. © Miguel A. Demeneghi Reyes

Fig. 4. The Inter-mountain Grasslands at Rancho Valle Colombia, with two dominant grasses of the genera *Bouteloua* and *Eragrostris*. © Alexander Peña-Peniche

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***Crotalus totonacus* Gloyd and Kauffeld, 1940**. **Diet.** The Totonacan Rattlesnake (*Crotalus totonacus*) is a Mexican endemic that inhabits the coastal plain of the Gulf of Mexico and the adjacent areas on the eastern versant of the Sierra Madre Oriental, and has been reported from the states of Hidalgo, Nuevo León, Querétaro, San Luis Potosí, Tamaulipas, and Veracruz, and a plausible photographic record from the state of Guanajuato, municipality of Xichú, posted on the Internet (Farr et al., 2015). This species has not been evaluated on the IUCN Red List (www.redlist.org) or by Mexican law (SEMARNAT, 2010), but Wilson et al. (2013) assigned *C. totonacus* an Environmental Vulnerability Score of 17, which placed it in the middle of the high vulnerability category. Little information is available on the natural history of *C. totonacus*, including its diet, but based on its size and relationships to other closely related members of its genus, this rattlesnake is expected to feed mostly on mammals. Klauber (1972) noted that three specimens of *C. totonacus* contained mammal hair and one feathers, but did not provide additional data. This species also has been reported to feed on rats (*Neotoma* sp.), squirrels (*Otospermophilus variegatus*, *Sciurus alleni*), and an opossum (*Didelphis* sp.) (Campbell and Lamar, 2004; Farr et al., 2015).

On 23 April 2010 at 1300 h, a male *C. totonacus* (snout–vent length = 1,268 mm; tail length = 110 mm; and body mass = 960 g; Fig 1.) was found dead just after it had been killed by local people at 1.9 km NE of La Nueva Reforma, Alaquines, San Luis Potosí, Mexico (22.12464°N, 99.506626°W; WGS 84; elev. 1,396 m), in mesophilic mountain forest (or tropical montane cloud forest) consisting largely of Copalillo Trees (*Liquidambar styraciflua*) in the Sierra Madre Oriental Plegada, region 1 of high national priority for this vegetation type (CONABIO, 2010). Upon dissecting the snake, we found digested mammal remains that included the dorsal guard hairs of a White-eared Cotton Rat (*Sigmodon leucotis*), which we identified based on the hair characteristics and known distribution if this species (Álvarez-Castañeda et al., 2016). The specimen of *C. totonacus* was deposited in the herpetological collection at El Colegio de la Frontera Sur (ECOSUR) at Chetumal, Quintana Roo, Mexico (ECO-CH-H-3857). This note represents the first record of the genus *Sigmodon* (and of *S. leucotis*) in the diet of *C. totonacus*. These anecdotal records demonstrate the need for a systematic study on the diet of this species, to shed insights on its ecological requirements to help generate future conservation strategies.

Fig. 1. A male *Crotalus totonacus* (ECO-CH-H-3857) found dead at 1.9 km NE of La Nueva Reforma, Alaquines, San Luis Potosí, Mexico, which contained the remains of a *Sigmodon leucotis*. © Gustavo E. Quintero-Díaz

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***Oxybelis fulgidus* (Daudin, 1803). Diet.** The Green Vinesnake, *Oxybelis fulgidus*, is a large, diurnal, fast and agile, and primarily arboreal opistoglyphous colubrid with a widespread Neotropical distribution that extends from Mexico to Argentina (Savage, 2002; Solórzano, 2004). This species is an opportunistic sit-and-wait predator that occasionally forages for prey (Martins and Oliveira, 1998), and feeds primarily on lizards and birds (Scartozzoni et al., 2009), but occasionally on insects, frogs, and mammals (Köhler, 2001; Savage, 2002).

Oxybelis fulgidus is known to prey on the following bird species: Bucconidae (*Monasa nigrifrons* [Endo et al., 2007]); Columbidae (*Columbina passerina* [Fraga et al., 2012], and *C. squammata* [Miranda et al., 2013]); Emberizidae (Sosa-Bartuano and Rodríguez-Beitía, 2015); Fringillidae (*Spinus notatus* [Stuart, 1948]); Furnariidae (*Dendrocincla homochroa* [Leenders and Colwell, 2003, 2004]); Icteridae (*Leistes militaris* [Capurucho and Costa, 2012]); Muscicapidae (neonate) and Parulidae (Scartozzoni et al., 2009); Pipridae (*Pipra* sp. [Martins and Oliveira, 1998]); Rallidae (*Rufirallus viridis* [Bringsøe, 2002]); Thamnophilidae (*Taraba major* [Silva Pena et al., 2017]); Thraupidae (*Tangara episcopus* [Martins and Oliveira, 1998], and *Volatinia jacarina* [Scartozzoni et al., 2009]), Trochilidae (*Amazilia tzacatl* [van Dort, 2011]); Troglodytidae (*Troglodytes aedon* [Sosa-Bartuano and Rodríguez-Beitía, 2015]); Turdidae (*Turdus grayi* [Figueroa and Valerio, 2011, and Solórzano and Simms, 2015], and *T. leucomelas* [Viana et al., 2014]); and Tyrannidae (*Elaenia* sp. [Rodrigues et al., 2005], *Pitangus sulphuratus* [Viana et al., 2014], and *Tyrannus melancholicus chloronotus* [Hayes, 2002]). Here, we report a new species and family

of avian prey for *O. fulgidus* with a predation record of a Turquoise-browed Motmot (*Eumomota superciliosa*: Momotidae), which is the national bird of Nicaragua and El Salvador.

On 15 May 2017 at 1130 h, in Las Parcelas, Escamequita (11.20621°N, 85.80041°W; datum WGS 84; elev. 25 m), Municipio de San Juan del Sur, Departamento de Rivas, Nicaragua, one of us (DLC) was alerted by the loud screams of two Turquoise-browed Motmots and observed an adult *O. fulgidus* preying on a third *Eumomota superciliosa* (Momotidae; Fig 1) ca. 8 m above the ground on a tree in a dry river bed in Lowland Dry Forest (Holdridge, 1967; Savage, 2002). After taking a photograph, he left and returned ca. 40 min later to find that the snake had almost finished swallowing the bird. Neither the bird nor the snake were collected.

Fig. 1. An *Oxybelis fulgidus* preying on a Turquoise-browed Motmot (*Eumomota superciliosa*) at Las Parcelas, Escamequita, Municipio de San Juan del Sur, Departamento de Rivas, Nicaragua. © David Lee Cherry, Jr.

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***Rhinocheilus lecontei* Baird and Girard, 1853. Diet.** The Western Long-nosed Snake (*Rhinocheilus lecontei*) is a terrestrial an almost exclusively nocturnal species, with a widespread distribution that extends throughout much of the southwestern to the south central United States, and in Mexico from Baja California, Sonora, Chihuahua, San Luis Potosí, Tamaulipas, Nayarit, Jalisco to southwestern Aguascalientes, and Zacatecas (Hammerson et al., 2007; Carbajal-Márquez et al., 2011; Lemos-Espinal and Dixon, 2013; Wallach et al., 2014; Carbajal-Márquez et al., 2015). The taxonomic status of members of this genus, however, has been controversial (see Grismer, 1999; Lemos-Espinal et al., 2004; Manier, 2004; Wallach et al., 2014; Rorabaugh and Lemos-Espinal, 2016).

The Western Mexico Whiptail (*Aspidocelis costata*) is a fast-moving, terrestrial and diurnal lizard that is endemic to Mexico, and ranges from southeastern Sonora and southwestern Chihuahua southward through Pacific coastal plain to Colima, and eastward through the Balsas Depression to Puebla and western Veracruz (Frost et al. 2007; Lemos-Espinal and Smith, 2009).

Rodríguez Robles and Greene (1999) reported lizards (66%), mammals (26%), squamate eggs (7%) and insects (0.7%) as part of the diet of *R. lecontei*, of which teeid lizards of the genus *Aspidoscelis* comprised 72% of the diet (*Aspidoscelis* sp., *A. ceralbensis*, *A. marmorata*, *A. sexlineata*, *A. tesselata*, *A. tigris*, *A.* cf. *tigris*, and *A. uniparens*).

On 13 April 2017 at 0817h, at Playa Novillero, Municipio de Tecuala, Nayarit, Mexico (22.369505°N, -105.682296°W; WGS 84; elev. 7 m), one of us (JALB) found an adult *R. lecontei* that recently had been killed, which contained a partially digested individual of *A. costata* (Fig. 1). To our knowledge, this is the first report of *A. costata* in the diet of *R. lecontei.*

Fig. 1. (A) A Western Long-nosed Snake (*Rhinocheilus lecontei*) found dead at Playa Novillero, Municipio de Tecuala, Nayarit, Mexico; and (B) the stomach contained a Western Mexico Whiptail (*Aspidocelis costata*). © Jesús A. Loc-Barragán

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***Trachemys ornata* (Gray, 1831). Predation and reproduction.** The Ornate Slider, *Trachemys ornata*, is an endemic freshwater turtle that occurs in western Mexico (Legler and Vogt, 2013); its distribution ranges from Culiacán, Sinaloa, to Puerto Vallarta, Jalisco (Casas-Andreu et al., 2015; Parham et al., 2015). For some time the taxonomic status of this species was uncertain, but in a molecular study Parham et al. (2015) showed that *T. ornata* from the type region are not phylogenetically nested within *T. venusta*. To date, some studies have reported certain aspects of this species, including its cultural uses by humans (Cupul-Magaña and Mountjoy, 2012), morphology (Legler and Vogt, 2013), and feedings habits (Hernández-Macías et al., 2017). Nonetheless, other aspects such as demography, ecology and/or life history remain somewhat limited, but these are necessary to evaluate its conservation status (e.g., information on natural predators remains unavailable). Herein we report the first records of Great Blue Heron, *Ardea herodias* Linnaeus, 1758, the Yellow-crowned Night-Heron, *Nyctanassa violacea* (Linnaeus, 1758), and the Tropical Fire Ant, *Solenopsis geminata* (Fabricius, 1804), preying on hatchlings of *T. ornata*.

Ardea herodias is one of the most widespread and adaptable wading birds in North America; its diet includes fishes, frogs, salamanders, lizards, snakes, shrimp, crabs, crayfishes, arthropods (land and aquatic), other birds, and small mammals (Terres, 1991). *Nyctanassa violacea* occurs in North America, the West Indies, and along the coasts of Central- and South America, and its opportunistic, carnivorous diet includes freshwater and shore crustaceans (crayfishes, crabs, and amphipods), amphibians (frogs), reptiles (lizards, and snakes), molluscs, annelids (leeches, earthworms, and polychaetes), centipedes, scorpions, aquatic insects, fishes, and small mammals (IUCN Heron Specialist Group, 2011). Trager (1991: 166) noted that *Solenopsis geminata*, apparently is "native from the

southeast coastal plain and Florida to Texas (lacking in Alabama, Mississippi and Louisiana?) south through Central America to northern South America, including the coastal areas of northern Brazil, west through the Guianas to the Orinoco Basin, the western Amazon Basin and coastal areas of Peru." Further, Trager (1991) indicated that the populations of this fire ant in the Antilles and the Galapagos, and possibly the ones in the southeastern United States, have been introduced but have resided in these areas for several centuries, and that this species also has been introduced into both tropical Asia and Africa. In addition to foraging for insects and general scavenging, this ant also is known to harvest seeds (Risch and Carroll, 1981; Carroll and Risch, 1984).

On 28 June 2017, at Marina Vallarta Club de Golf, Puerto Vallarta, Jalisco, Mexico (20°40'01"N, 105°15'51"W; datum: WGS 84; elev. < 4 m), one of us (FMC) observed and photographed an adult *A. herodias*, an adult *N. violacea*, and a swarm of *S. geminata* preying on hatchlings of *T. ornata* (Fig. 1). Both of the birds captured the turtles and tossed them in the air before swallowing them, whereas the ants were feeding on a dead individual (Fig. 1). We assume that the turtles had hatched recently, because evidence of freshly hatched eggs was found in a nest near the observation site.

Fig. 1. Individuals of *Ardea herodias* (A), *Nyctanassa violacea* (B), and a swarm of *Solenopsis geminata* (C) preying on hatchlings of *Trachemys ornata* at Marina Vallarta Club de Golf, Puerto Vallarta, Jalisco, Mexico. © Frank Mc Cann

With regard to reproductive information, Legler and Vogt (2013) indicated that egg laying in *T. ornata* occurs in early May. In addition, during a four-year period we observed turtles at Marina Vallarta Club de Golf laying eggs from mid- to late April. Based on our observations, the nesting season could begin in April, and hatching could extend to late June or early July. Nevertheless, additional studies are needed to fully understand the reproductive and nesting ecology of *T. ornata* in modified habitats within tropical dry forest.

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Amphibia: Anura

Family Eleutherodactylidae

***Eleutherodactylus maurus* (Hedges, 1989).** MEXICO: ESTADO DE MÉXICO: Municipio de Ocuilán de Arteaga, Parque Nacional Lagunas de Zempoala (19.7932°N, 99.32435°W; WGS 84) elev. 3,020 m; 14 May 2017; Carlos Jesús Balderas-Valdivia. A photo voucher (UNAM; IBH-RF 435) is deposited in the Colección Nacional de Anfibios y Reptiles of the Universidad Nacional Autónoma de México. We observed a juvenile *Eleutherodactylus maurus* at ca. 1310 h, jumping in leaf litter and volcanic rock in pine-oak forest. The individual (Fig. 1) measured 15 mm in snout–vent length, and its description and microhabitat correspond with the information provided by Davis and Dixon (1955) and Hedges (1989). Casas-Andreu (1997) and Aguilar and Casas-Andreu (2009) reported *E. maurus* from Estado de México, but did not provide specific localities. Although informal records of this species appear in websites, this is the first report of *E. maurus* occurring in a specific locality within Estado de México. To the best of our knowledge, this specimen also represents an elevational record for this species, as Wilson and Johnson (2010) reported the highest known elevation as 2,682 m.

Fig. 1. An *Eleutherodactylus maurus* (UNAM; IBH-RF 435) photographed at Parque Nacional Lagunas de Zempoala, Ocuilán de Arteaga, Estado de México, Mexico. © Carlos Jesús Balderas-Valdivia

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Family Hylidae

***Ecnomiohyla miliaria* (Cope, 1886).** NICARAGUA: RÍO SAN JUAN: along the Río San Juan, in front of the northern side of Isla El Diamante (10.92582°N, 84.31060°W; WGS 84); elev. 40 m; 7 May 2017; Yarlen Díaz Gómez. A photo voucher of this individual is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8948; Fig. 1A, B). The individual, which was not collected, was found at 0900 h, perched at 1.2 m above the ground on the trunk of a plant called Caña-agria (*Costus guanaiensis*) near a small, slow-moving stream in pristine Tropical Wet Forest (Holdridge, 1967). In Nicaragua, this species only was known from the holotype (Sunyer et al., 2009), collected between 22 January and 29 April 1885 "between El Castillo and San Juan del Norte, along the Río San Juan and its tributaries, Departamento Río San Juan, Nicaragua" (Savage, 1973). Our record, therefore, represents the second individual known from Nicaragua, the first with an exact locality, and first photographs in life of this species from the country.

Fig. 1. Two photographs (A, B; UTADC-8948) of the same individual of *Ecnomiohyla miliaria* from the Río San Juan, Departamento de Río San Juan, Nicaragua. © Yarlen Díaz Gómez

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***Ecnomiohyla miliaria*. Distribution in Pacific Costa Rica.** The genus *Ecnomiohyla* was erected by Faivovich et al. (2005) to accommodate the former *Hyla tuberculosa* group (*sensu* Savage, 2002). Ron et al. (2016) placed *Ecnomiohyla tuberculosa* in the genus *Tepuihyla*, and noted that the type species of *Ecnomiohyla* is *Hypsiboas miliarius* Cope, 1886. Of the 12 species of *Ecnomiohyla* currently recognized, only four are known to occur in Costa Rica: *Ecnomiohyla bailarina* Batista, Hertz, Mebert, Köhler, Lotzkat, Ponce, and Vesely, 2014; *E. fimbrimembra* (Taylor, 1948); *E. miliaria* (Cope, 1886); and *E. sukia* Savage and Kubicki, 2010. In Costa Rica, members of *Ecnomiohyla* primarily occur along the Atlantic versant. *Ecnomiohyla miliaria* is the most widely distributed of these species, and along the Atlantic versant of the country it occurs at elevations from sea level to 900 m (Leenders, 2016); on the Pacific slope, it is known from two localities in the southwestern portion of the Cordillera de Talamanca, both from near San Vito de Coto Brus, Provincia de Puntarenas, at elevations of 1,200 and 1,400 m (Savage and Kubicki, 2010). The distribution of this species also has been reported from few Honduran, Nicaraguan, Panamanian, and Colombian localities (Köhler, 2011; Leenders, 2016; Díaz Gómez et al., *This Issue*). The biogeography of *E. miliaria* remains poorly understood, and in Costa Rica the two known localities on Pacific versant are disjunct from those along the Caribbean. Accordingly, the specimens from this region perhaps should be reexamined, as they might represent a distinct (but similar) species.

Herein we report a new locality for *E. miliaria* from along the Pacific versant of Costa Rica. Although based on photographs it is difficult to differentiate between *E. miliaria* and *E. sukia*, the presence of enlarged tubercles on the eyelids can be used a distinguishing characteristic (Savage and Kubicki, 2010). On 21 June 2016, one of us (HT) encountered and photographed an *E. miliaria* at Esquipulas, near Quepos, Provincia de Puntarenas, Costa Rica (9°33'0.5472"N, 84°3'35.0748"W; WGS 84; elev. 555 m; Fig. 1). The animal was found sleeping on a tree trunk in primary forest on an overcast day, at a height of 1.6 m. This note constitutes the first report for *E. miliaria* from the Pacific central region of Costa Rica. We believe this species is more widely distributed along the premontane forests along the Pacific versant than records indicate, because as a high-canopy dweller *E. miliaria* rarely is encountered.

Fig. 1. An *Ecnomiohyla miliaria* from Esquipulas, near Quepos, Provincia de Puntarenas, Costa Rica. © Horacio Torres

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***Megastomatohyla mixomaculata* (Taylor, 1950).** MEXICO: VERACRUZ: Municipio de Los Reyes, Ocotepec, Finca Santa Martha (18°40'32.44"N, 97°1'30.39"W; WGS 84); elev. 1,650 m; 5 June 2017; Jesse Hofmann. A photo voucher is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8939; Fig. 1). The frog was found in a private ranch located in cloud forest, where the vegetation consists mostly of *Liquidambar*, *Quercus*, and *Cupressus* trees.

MEXICO: VERACRUZ: Municipio de Zongolica, La Compañía (18°38'59"N, 97°00'30."W; WGS 84); elev. 1,316 m, 12 July 2015; Erasmo Cázares-Hernández. Two specimens are deposited in the Colección Científica del Instituto Tecnológico Superior de Zongolica, Veracruz (ITSZ-A-036, 110; collecting permit SEMARNAT-08-049). This species is abundant in cloud forest in the Sierra de Zongolica, Veracruz, along permanent streams with abundant vegetation at elevations from 1,200 to 1,600 m.

In this note we provide new municipality records for this species. The localities are close to one another, with the nearest reported for both at Coscomatepec de Bravo (Taylor, 1950), which lies ca. 45 km to the south.

Fig. 1. A *Megastomatohyla mixomaculata* (UTADC-8939) from Finca Santa Martha, Ocotepec, Municipio de Los Reyes, Veracruz, Mexico. © Jesse Hofmann

Acknowledgments.—ECH thanks Dr. Ramiro Sánchez-Uranga (General Director) and Lic. Yamil Vargas-Rivera (Deputy Director of Research) at the Instituto Tecnológico Superior de Zongolica for supporting our internal research projects, and Carl J. Franklin for providing the photo voucher number.

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Ptychohyla zophodes **Campbell and Duellman, 2000.** MEXICO: VERACRUZ: Municipio de Los Reyes, Ocotepec, Finca Santa Martha (18°40'32.44"N, 97°1'30.39"W; WGS 84; elev. 1,650 m); 4 June–7 July 2017, Miguel Ángel de la Torre Loranca. A photo voucher is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8940; Fig. 1). Three individuals were found at night in a private ranch located in cloud forest, within a ca. 400 ha patch of forest consisting mostly of *Liquidambar*, *Quercus*, and *Cupressus* trees. The frogs agree with the description provided by Campbell and Duellman (2000). The specimens are deposited in the Colección Científica del Instituto Tecnológico Superior de Zongolica (ITSZ-A-103, ITSZ-A-104 y ITSZ-A-109: collecting permit SEMARNAT-08-049).

MEXICO: VERACRUZ: Municipio de Tezonapa, Unión y Progreso (18°38'16"N, 96°50'40"W; WGS 84); elev. 1,361 m; 15 July 2017; Mauro Daniel Castro-Morales. Three specimens, collected in a transition area between tropical rainforest and cloud forest, are deposited in the Colección Científica del Instituto Tecnológico Superior de Zongolica, Veracruz (ITSZ-A-U-10, 12-13; collecting permit SEMARNAT-08-049). These specimens represent the first records for the state, as previously this species had been reported only from Oaxaca and Puebla (Campbell and Duellman, 2000; García-Vázquez et al., 2009), with the nearest locality ca. 22 km NW of Eloxochitlán, Puebla (García-Vázquez et al., 2009).

Ptychohyla zophodes is abundant at the above localities and reproduces throughout the rainy season, which lasts for over eight months. Areas of cloud forest and tropical rainforest along the Sierra Zongolica receive a substantial amount of rainfall, as a result of the proximity to the Gulf of Mexico.

Fig. 1. An individual of *Ptychohyla zophodes* (UTADC-8940) from Finca Santa Martha, Los Reyes, Veracruz.
© Ivan Ahumada-Carrillo

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Amphibia: Caudata

Family Plethodontidae

***Pseudoeurycea mystax* Bogert, 1966.** MEXICO, OAXACA, Municipio Totontepec Villa de Morelos, 8.6 km W of Totontepec Villa de Morelos (17°16'31.49"N, 96°6'27.71"W; WGS 84); elev. 2,038 m; 10 March 2014; Roberto Flores-Diego, Sandra O. Peláez-Santiago, César T. Aldape-López, and Mario C. Lavariega-Nolasco. During a biological survey in an Indigenous and community conserved area (ICCA; see Martin et al., 2011) in the town of Totontepec Villa de Morelos, in the Sierra Mixe, at 1604 h we observed an individual of *Pseudoeurycea mystax*. The salamander was found along the road from Totontepec Villa de Morelos to San Andrés Yaa, 28 km to the NW of the type locality at "0.9 kilometers east-northeast of Ayutla, Oaxaca, in the Distrito de Villa Alta" (Bogert, 1967: 12; Fig. 1). The individual was found in cloud forest near a bromeliad (*Catopsis* sp.) lying on the ground, where it was photographed (Fig. 2). A photo voucher of this individual is deposited at the University of Texas at El Paso (UTEP)'s Biodiversity Collections (Herpetology Observations); photo voucher UTEPObs:Herp120.

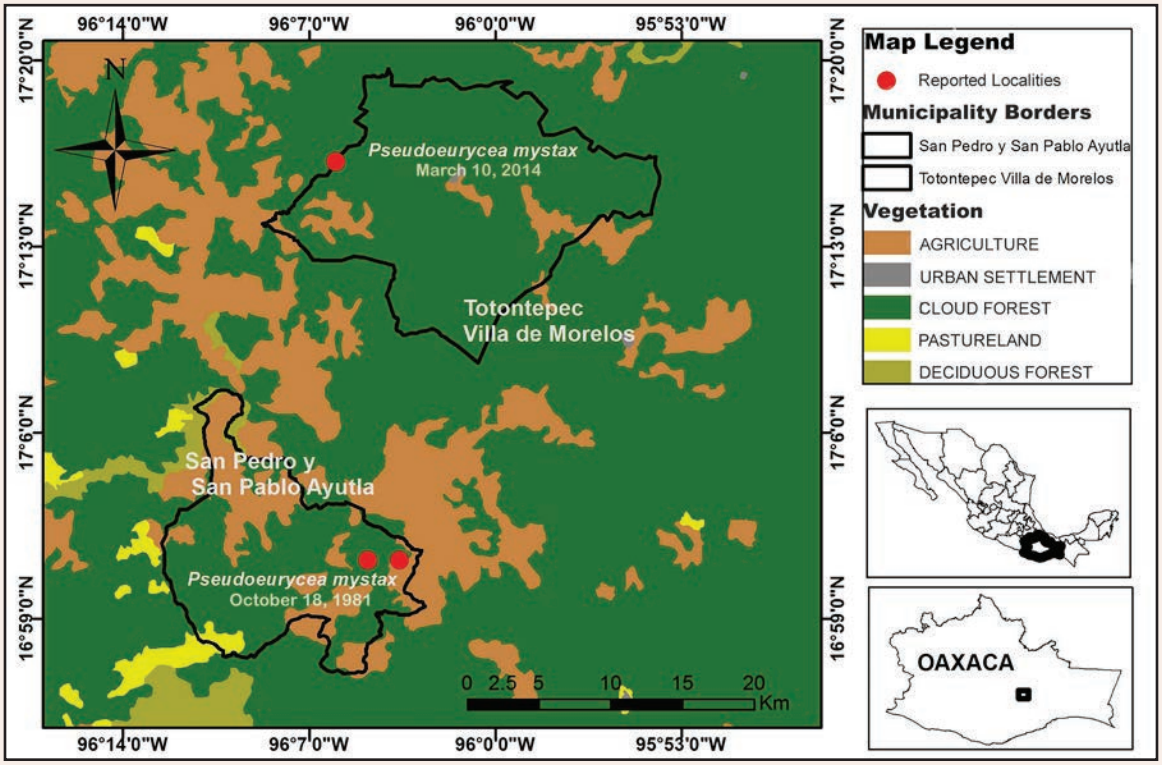

Fig. 1. Historical and current records for *Pseudoeurycea mystax* in the Sierra Mixe, Oaxaca, Mexico.

We identified the individual as *P. mystax* based on the presence of round, black spots on the dorsum and flanks anterior to the insertion of the hind limbs, as well as faint traces of pink pigment along the back and snout. Additionally, a few black spots were present on the tail, with large, black-bordered white spots mostly concentrated laterally. Among the most conspicuous elements of the color pattern were the presence of irregularly-sized white spots on the tail and occasionally on the rear flank of the trunk, as reported by Bogert (1967). *Pseudoeurycea mystax* was described based on two specimens (AMNH No. 76363 and 76362) collected by C. M. Bogert on July 26, 1966 under rocks along a creek locally known as the Rio Alacrán, at an elevation of ca. 2,050 m. Subsequently, on 18 October 1981 David B. Wake collected four specimens, plus an additional specimen with Theodore J. Papenfuss, in a canyon 1 km E of the towns of San Pedro and San Pablo Ayutla (Arctos, 2017), and collectively these remain the only known specimens of this species.

The distance between the historical records and the record reported herein suggests that *P. mystax* might occur in cloud forest along Cerro Zempoaltépetl in Oaxaca. Furthermore, our voucher represents the first record in 34 years, and highlights the need for conducting biological inventories in this region. According to Mexican law, *P. mystax* is endemic to the Sierra Mixe of Oaxaca and is categorized as threatened (A = amanazada; SEMARNAT, 2010), whereas the International Union for Conservation of Nature (IUCN) lists this species as Critically Endangered (IUCN, 2016). Furthermore, Wilson et al. (2015) assessed this species an Environmental Vulnerability Score (EVS) of 18, which is in the upper portion of the Endangered category. The conservation of *P. mystax*, as well as the species with which it coexists and their habitats, might depend on the decisions taken by residents to target that area as an ICCA, an emerging conservation strategy in the state of Oaxaca (Ortega del Valle et al., 2010).

Fig. 2. An individual of *Pseudoeurycea mystax* (UTEPObs:Herp120) found 8.6 km W of Totontepec Villa de Morelos, Municipio de Totontepec Villa de Morelos, Oaxaca, Mexico. © Roberto Flores-Diego

Acknowledgments.—The authors thank the authorities of Totontepec Villa de Morelos for providing the facilities for this study, and Teresa Mayfield for providing the photo voucher number.

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Reptilia: Squamata (lizards)

Family Polychrotidae

***Polychrus gutturosus* Berthold, 1845.** HONDURAS: ATLÁNTIDA: Parque Nacional Pico Bonito, The Lodge & Spa at Pico Bonito; two individuals of *Polychrus gutturosus* were observed within the park. The first was found by Chris Benson on 9 December 2014 at 0930 h, basking on a boulder along the Río Coloradito (15°39'53.89"N, 86°54'29.17"W; WGS 84; elev. 326 m). A photo voucher of this individual is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8935; Fig. 1A). On 27 March 2017 at 1020 h, one of us (JA) observed the second individual basking on a boulder along the Río Corinto (15°40'33.06"N 56°53'26.92"W; WGS 84; elev. 410 m; Fig. 1B), despite the roaring water and mist produced by a nearby waterfall.

In Honduras, this species has been recorded in two ecophysiographic regions (the Eastern Caribbean Lowlands that contain parts of the departments of Cortés and Yoro, and the Western Caribbean Lowlands that contain the departments of Gracias a Dios and a part of El Paraiso; McCranie and Wilson, 2002; McCranie et al. 2006); however the only confirmed records of this species are from the department of Gracias a Dios between Biosfera del Río Platano and Reserva Biológica de Rus Rus (McCranie et al., 2006). The voucher (UTADC-8935) and photograph of the second individual reported herein represent the northernmost records along the Caribbean coast of the country (Fig. 2), as well as from its entire range, which extends from northwestern Honduras and western Costa Rica to northwestern Ecuador (Savage, 2002; Köhler, 2008; Koch et al., 2011).

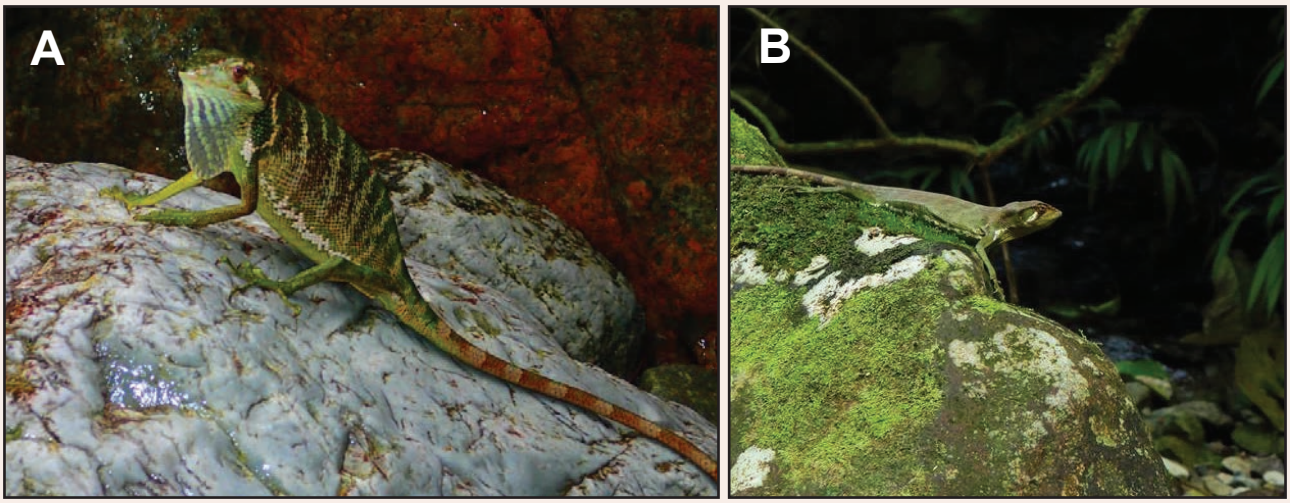

Fig. 1. (A) An adult male *Polychrus gutturosus* (UTADC-8935) basking on a rock along the Río Corinto in Parque Nacional Pico Bonito, Departamento de Atlántida, Honduras; and (B) a second individual also photographed in the park, basking on a boulder along the Río Corinto. © Chris Benson (A) and James Adams (B)

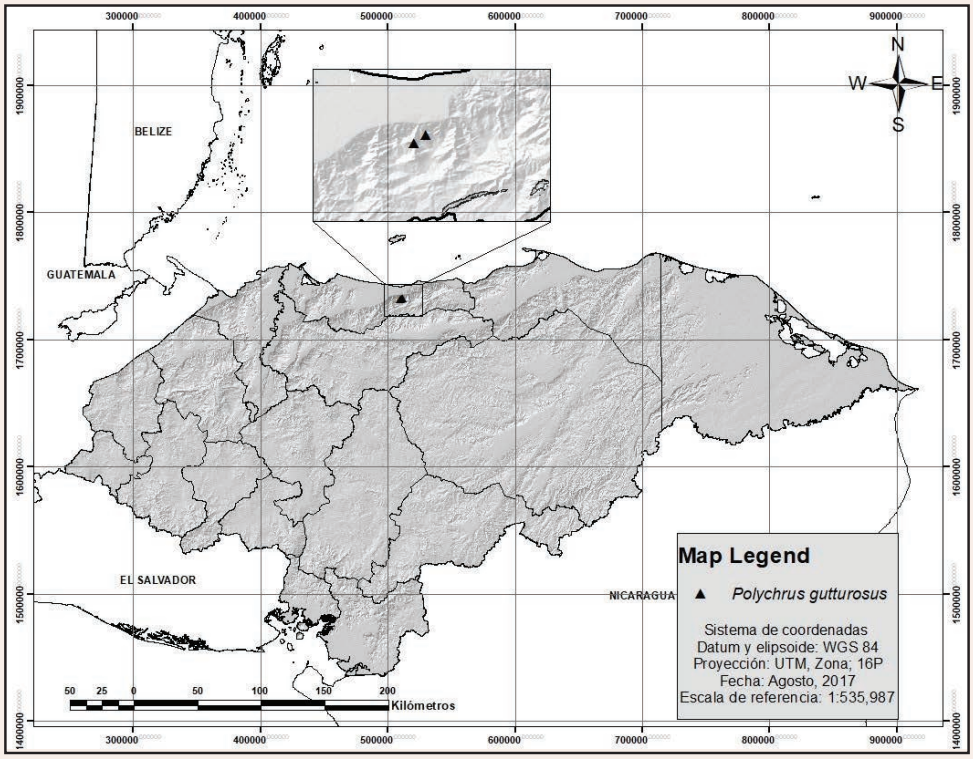

Fig. 2. A new locality for *Polychrus gutturosus* at Parque Nacional Pico Bonito, The Lodge & Spa at Pico Bonito, Municipio de El Porvenir, Departamento de Atlántida, Honduras.

Acknowledgments.—We thank Chris Benson for providing the photograph and information for the first observation in this note, Joel Mejía for being an exceptional guide at "The Lodge & Spa" at Parque Nacional Pico Bonito, Larry D. Wilson and Louis W. Porras for comments that improved ad earlier draft of the manuscript, and Carl J. Franklin for providing the photo voucher number.

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Family Xantusiidae

***Lepidophyma flavimaculatum* Duméril, 1851.** NICARAGUA: BOACO: Municipio de Camoapa, southern slope of Cerro Masigüe, Finca Santa Elena (12.53579°N, 85.35665°W; WGS 84); elev. 540 m; 4 September 2017; Lenin Alexander Obando. A photo voucher of this individual is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8949; Fig. 1). The lizard was found at 1700 h, ca. 3 m above the ground on the wall of a latrine surrounded by disturbed Lowland Moist Forest (Holdridge, 1967; Savage, 2002). This locality represents a new record for the department of Boaco. In Nicaragua, this species has been recorded from the departments of Atlántico Norte, Atlántico Sur, Jinotega, Matagalpa, Río San Juan, and Rivas (Köhler, 2001; Gómez et al., 2011; Sunyer et al., 2016). Additionally, Bezy (1989) and Bezy and Camarillo (2002) included AMNH 16402 from Tule or Tuli Creek in the department of Chontales, but Köhler (2001) regarded this specimen as from the department of Río San Juan.

Fig. 1. An adult *Lepidophyma flavimaculatum* (UTADC-8949) from Finca Santa Elena, Departamento de Boaco, Nicaragua.

© Lenin Alexander Obando

Acknowledgments.—We thank Carl J. Franklin for providing the photo voucher number.

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New records for two reptiles from the Bay Islands, Honduras

Family Dactyloidae

***Norops sagrei* (Duméril & Bibron, 1837)**. HONDURAS: ISLAS DE LA BAHÍA: Guanaja (16°26.781'N, 85°53.724'W: WGS 84); elev. 11 m; 10 July 2017; José Mario Solís. A photo voucher of this individual is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8936; Fig. 1A). JMS found the lizard at 0945 h, foraging in the low vegetation, and we observed other individuals in the area perched on low branches at night. In Honduras, this introduced lizard has been recorded from the mainland departments of Atlántida, Cortés, and Santa Bárbara (Espinal et al., 2014; McCranie and Köhler, 2015). This voucher represents an expansion of this lizard in the department (Fig. 2), as previously it had been recorded on the islands of Roatán and Utila (McCranie et al., 2005; McCranie and Nuñez, 2014; McCranie and Valdéz-Orellana, 2014).

Family Dipsadidae

***Coniophanes bipunctatus* (Günther, 1858).** HONDURAS: ISLAS DE LA BAHÍA: Guanaja (16°26.731'N, 85°53.695'W; WGS 84); elev 10 m; 13 July 2017; José Mario Solís. A photo voucher of this individual is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8937; Fig. 1B). The snake was found at 2045 h, crawling in vegetation. The distribution of this snake in Honduras has been recorded in the mainland departments of Atlántida, Colón, Cortés, and Gracias a Dios, (McCranie, 2011). This voucher represents the second locality of this species from the department of Islas de la Bahía (Fig. 2), as previously it was reported only from the island of Roatán (McCranie et al., 2005; McCranie and Valdéz Orellana, 2014).

Fig. 1. New records for reptiles from the from the island of Guanaja, Departamento de Islas de la Bahía, Honduras. (A) An adult female *Norops sagrei* (UTADC-8936); and (B) an adult *Coniophanes bipunctatus* (UTADC-8937). © José Mario Solís

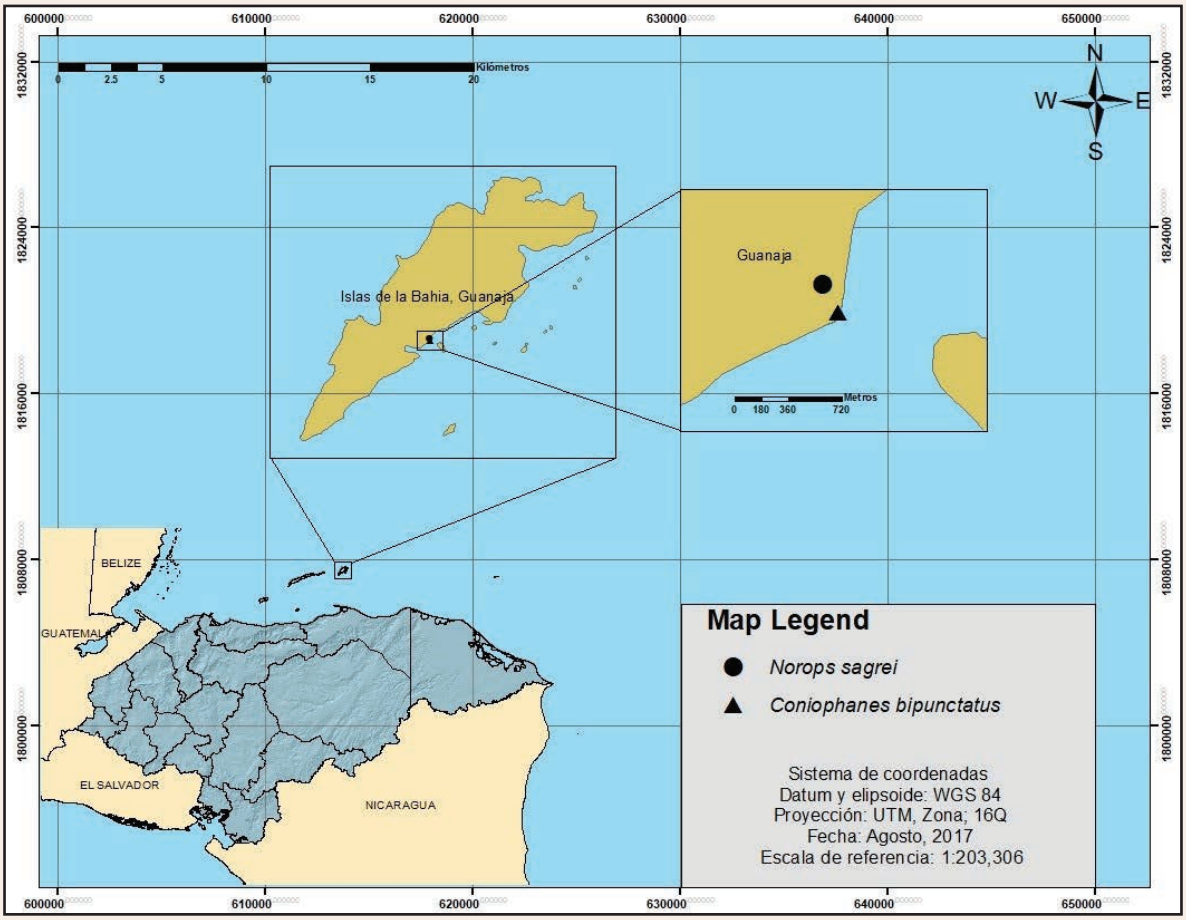

Fig. 2. Map indicating a new locality for *Norops sagrei* and *Coniophanes bipunctatus* from the island of Guanaja, Departamento de Islas de la Bahía, Honduras.

Acknowledgments.—We thank Angel Fong for his company and assistance during our fieldwork, Larry David Wilson and Louis W. Porras for commenting on a draft of this manuscript, and Carl J. Franklin for providing the photo voucher numbers.

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Reptilia: Squamata (snakes)

A new record for *Leptophis cupreus* (Cope, 1868) (Squamata: Colubridae) for Panama and Mesoamerica

Cope (1868) described *Leptophis cupreus* (as *Thrasops cupreus*) on the basis of a female holotype (ANSP 5202) from "River Napo and Maranon, Ecuador," interpreted as equivalent to "Napo/Orellana Prov., NE Ecuador, or Loreto Dept., NE Peru" by Wallach et al. (2014). Curiously, however, this taxon was not mentioned in the list of names proposed for the genus *Thalerophis* (= *Leptophis*) provided by Oliver (1948) in his generic revision (see Albuquerque and McDiarmid, 2010). Thus, Peters and Orcés-V. (1960) resurrected this taxon from obscurity and established it as a valid species under the name *Leptophis cupreus*. Interestingly, these authors indicated that the holotype of *Thrasops cupreus* was lost, inasmuch as it could not be located within the collections of the Smithsonian Institution (i.e., the National Museum of Natural History). Originally catalogued as USNM 6666, the holotype was located by Malnate (1971) in the collection of the Academy of Natural Sciences of Philadelphia, where it is catalogued as ASNP 5202 (see Albuquerque and McDiarmid, 2010). The resurrection of this taxon allowed it to be included in Peters (1960), in which it was stated to range on the "lower Amazonian slopes in Ecuador."

Leptophis cupreus remained poorly known until relatively recently, when Albuquerque and McDiarmid (2010) redescribed the species on the basis of 18 specimens, including the holotype, upholding its resurrection by Peters and Orcés-V. (1960). Nevertheless, Albuquerque and McDiarmid (2010) still characterized this species in the title of their paper as "a rare South American colubrine snake." These authors (p. 380) indicated *L. cupreus* to be "known from the southwestern Guayana Highlands of Venezuela and adjacent Colombia (Sierra de La Macarena), the Amazonian lowlands of Ecuador, Colombia, and Peru, and from two localities on the Pacific versant of the Andes in Colombia and Ecuador." The locality on "the Pacific versant of the Andes in Colombia" is that for LACM 45444, i.e., the "divide between Atrato and San Juan drainages near Tado [= Tadó]; trail between right bank of San Juan, opposite Tado [= Tadó] and I. Bordo [= Ibordo] in Atrato drainage," in the department of Chocó. This locality, the northwesternmost for *L. cupreus*, is evident in the map in Albuquerque and McDiarmid (2010: fig. 5), and lies somewhere along the trail crossing the continental divide between Tadó, lying alongside the Río San Juan on the Pacific versant, and Ibordo in the drainage of the Río Atrato on the Atlantic (Caribbean) versant. The trail apparently extends from the town of Tadó at an elevation of about 75 m to that of Ibordo at approximately 100 m. This locality seems to be at the lower end of the elevational range for this species, which, according to Albuquerque and McDiarmid (2010), extends upward to some point between 1,820 and 1,880 m on Cerro de la Neblina near the southern border of Venezuela.

Fieldwork undertaken by AB documents the presence of *Leptophis cupreus* in Panama and in Mesoamerica. The specimen (MHCH 3218 [field collecting number AB 1386]; Fig. 1) came from 2 km NW of Cocalito (7°18'22.08"N, 77°59'1.31"W; WGS 84; elev. 200 m), Jaqué, Provincia de Darién, Panama; it was collected on 22 May 2016 at 1320 h by Abel Batista. This record extends the distribution of this species ca. 283 km to the NW from the divide between the Atrato and San Juan drainages near Tado (5°18'N, 76°33'W; WGS 84), Chocó, Colombia (Albuquerque and McDiarmid, 2010). The specimen is a male preserved with its hemipenis everted. The specimen was found in a Tropical and Subtropical Moist Broadleaf Forest, within the Choco-Darién moist forest ecoregion of the world (WWF, 2017); it was found in a pristine forest beside a small stream, where it was lying on a rock.

Fig. 1. An adult *Leptophis cupreus* from 2 km NW of Cocalito, Jaqué, Provincia de Darién, Panama. © Abel Batista

Acknowledgments.—A collecting permit was provided by the Ministerio de Ambiente (# SE/A-60-16). The expedition was supported by For-Conservation Foundation of Panamanian Primates (FCPP), Panama, Mohamed bin-Zayed Species Conservation Fund, Rufford Small Grants, and NatExplorers. The purpose of the expedition was to search for a rare spider monkey (*Ateles geoffroyi grisescens*). We thank Pedro Méndez Carvaljal, the leader of the expedition and principal researcher and founder of FCPP, Barbara Réthoré and Julien Chapuis from NatExplorers, Ovidio Jaramillo and Bonarjes Rodríguez for their field support, the people of the village of Cocalito for kindly receiving us and facilitating our stay during this expedition, and SENAFRONT for aquatic transportation from Puerto Quimba to Cocalito.

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First record of *Tantilla moesta* (Squamata: Colubridae) from the state of Campeche, Mexico

The genus *Tantilla* ranks second in the number of snake species in the Western Hemisphere, with 63 species currently described (Wilson and Mata-Silva, 2015; Batista et al., 2016; Koch and Venegas, 2016). The Black-bellied Centipede Snake (*Tantilla moesta*) is one of the 30 species in this genus found in Mexico (Wilson and Mata-Silva, 2014); its distribution is limited to low elevations of the Yucatan Peninsula in the Mexican states of Yucatán and Quintana Roo, and the northern portion of the Guatemalan department of El Petén (Wilson, 1982; Lee, 1996, 2000; Köhler, 2008; Wilson and Mata-Silva, 2015). Lee (1996) suggested that this species likely occurs in Belize and in the Mexican state of Campeche, but to date no published records are available to confirm its presence in these areas. Herein, we present the first record of *T. moesta* from the state of Campeche.

During a herpetofaunal survey, on 11 August 2016 at ca. 2200 h, an adult individual *T. moesta* (Fig.1) was found at "Km 20," Reserva de la Biósfera Calakmul, Municipio de Calakmul, Campeche, Mexico (18°21'59.61"N, 89°53'8.23"W; WGS 84; elev. 224 m). The snake was found in leaf litter, in undisturbed semi-evergreen tropical forest. A photograph of the snake is deposited in the University of Texas at El Paso (UTEP)'s Biodiversity

Collections, Herpetology Observations (UTEPObs:Herp:107). This voucher represents both the first record for this species and for the genus *Tantilla* in Campeche (Wilson and Mata-Silva, 2014; González-Sánchez et al., 2017), and extends the known distribution of *T. moesta* ca. 128 km to the NNE and ca. 220 km to the SW of the nearest localities from where this species previously was reported at "Paso Ceballos" in Guatemala and "18 mi S Felipe Carrillo Puerto" in Quintana Roo, Mexico, respectively (Lee, 1996). This record increases the current number of snake species reported for the state of Campeche to 52 (González-Sánchez et al., 2017).

Acknowledgments.—We thank Dr. Teresa J. Mayfield for kindly providing the photo voucher number. We also thank Charles Hofer for reading the manuscript and providing useful comments.

Fig. 1. A *Tantilla moesta* (UTEPObs:Herp:107) from "Km 20", Reserva de la Biósfera Calakmul, Municipio de Calakmul, Campeche, Mexico. © Edgar E. Neri-Castro

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Family Dipsadidae

***Enulius flavitorques* (Cope, 1868).** MEXICO: OAXACA. Municipio de San Sebastián Tutla, El Rosario (17.039125°N, -96.684816°W; datum WGS 84); elev. 1,608 m; 25 August 2017; Francisco Ramírez-Jiménez and César Mayoral-Halla. This individual (photo voucher UTEPObs:Herp:121; Fig. 1) represents a new municipality record, as well as the first record for the Valles Centrales de Oaxaca physiographic region (see Mata-Silva et al., 2015), with the closest reported locality ca. 107 km (straight line) to the SE at a locality cited as "54 mi WNW Tehuantepec (24 mi NW Tequisistlán) on highway 190" (TNHC 86889). The snake was found under an old carpet, in an empty lot located in the southern part of town. The lot is surrounded by houses, and contained patches of grass and herbaceous plants. The photo voucher is deposited in the University of Texas at El Paso (UTEP)'s Biodiversity Collections.

Fig. 1. An *Enulius flavitorques* (UTEPObs:Herp:121) from El Rosario, Municipio de San Sebastián Tutla, Oaxaca, Mexico.
© Francisco Ramírez-Jiménez

Acknowledgments.—A special thanks goes to Teresa Mayfield, who kindly provided the photo voucher number. The collecting permit (SGPA/DGVS/04287/16) was issued by SEMARNAT to ARB with extensions to VMS, and EGP.

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Family Dipsadidae

***Rhadinella montecristi* (Mertens, 1952).** The Monte Cristo Graceful Brownsnake (Culebra Marrón de Monte Cristo), *Rhadinella montecristi*, is distributed in El Salvador, Guatemala, and Honduras, at elevations from 1,370 to 2,620 m (McCranie, 2011). Considering that the known localities of this species are isolated from one another, Wilson et al. (2014) reported the extent of occurrence of this species as 18,000 km². In Honduras, *R. montecristi* has been reported from the departments of Comayagua, Copán, Cortés, Lempira, Ocotepeque, and Yoro (McCranie, 2011). Here we report a new departmental record of *R. montecristi* from the country.

On 19 March 2016, while on a dry season field trip to Reserva Biológica Guajiquiro, at Quesuntega, Municipio de Guajiquiro, Departamento de La Paz, Honduras (14°08'13.3"N, 87°50'36.8"W; WGS 84; WGS 84; elev. 2,141 m; Fig. 1), we encountered an individual of *R. montecristi* (MZUCR 22894). The snake was found in the morning, under tree bark at a height of 1.5 m above the ground. The measurements for the snake, a subadult male, were as follows: snout–vent length 300 mm; tail length 200 mm; and total length 500 (Fig. 2). This record represents a distributional extension of ca. 55 km (straight-line distance) to the SSE of the nearest reported locality in the department of Comayagua.

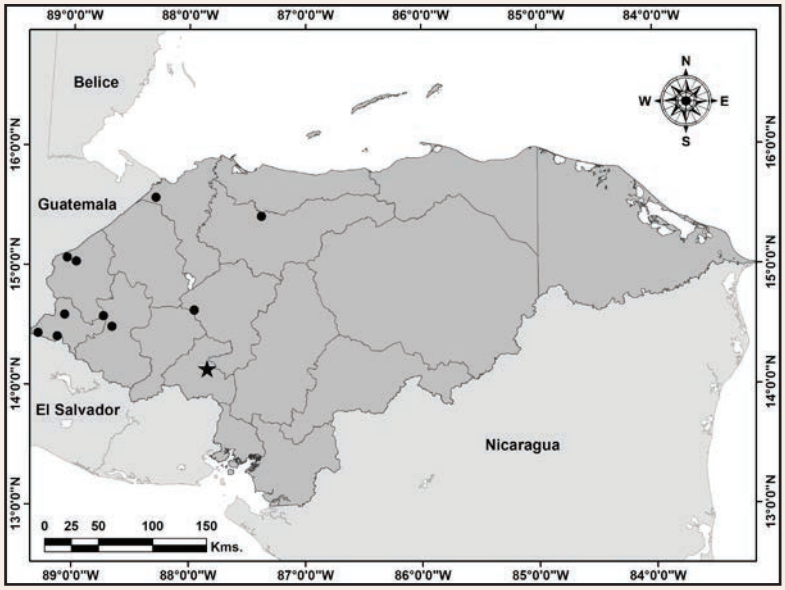

Fig. 1. Known localities for *Rhadinella montecristi* in Honduras (black dots) and the new record (star) from Reserva Biológica Guajiquiro, Quesuntega, Municipio de Guajiquiro, Departmento de La Paz, Honduras. Map courtesy of Jorge Funez.

Fig. 2. A *Rhadinella montecristi* (MZUCR 22894) from Reserva Biológica Guajiquiro, Quesuntega, Municipio de Guajiquiro, Departmento de La Paz, Honduras. Dorsal (A) and ventral (B) ventral views of the snake showing the coloration.
© Mario Espinal

Acknowledgments.—Fieldwork was completed under ICF permits and Resolución DE-MP-095-2014 and Dictamen ICF-DVS-112-2014. The specimen was deposited at the Museo de Zoología, Universidad de Costa Rica (MZUCR).

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Sibon dimidiatus **(Günther, 1872).** MEXICO: VERACRUZ: Municipio de Naranjal, Narajal (18°48'01.2"N, 96°57'07.7"W) elev. 660 m; 24 September 2016; Roberto Mora-Gallardo and Angel I. Contreras-Calvario. The individual was found and photographed in a coffee plantation (*Coffea arabica*) at 0100 h, where the surrounding vegetation consisted of tropical semi-deciduous forest. A photograph of the individual is deposited in the Colección Nacional de Anfibios y Reptiles de la Universidad Nacional Autónoma de México (IBH-RF-436; Fig. 1). This voucher represents a new municipality record and fills a gap in the known distribution, with the closest reported localities at 45 km (air distance) to the S in the vicinity of Tlacotepec de Porfirio Díaz, Puebla (Gutiérrez-Mayén et al., 2011), and ca. 280 km to the N near Los Naranjos, Veracruz (Kofron, 1990).

Fig. 1. A *Sibon dimidiatus* (IBH-RF-436) from Naranjal, Municipio de Naranjal, Veracruz, Mexico.
© Ángel I. Contreras-Calvario

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Family Viperidae

Crotalus intermedius **(Troschel, 1865).** MEXICO: HIDALGO: Municipio de Omitlán de Juárez (20.126504°N, -98.583045°W; WGS 84); elev. 2,681 m; 21 July 2017; Raúl Hernández-Jandete. The snake was found resting on the ground in a slope covered with oak chaparral. The measurements and weight of the snake were as follows: snout–vent length = 490 mm; tail length = 40 mm; and body mass = 118 g. The snake was photographed and released where it was found. A photo voucher (CH-CIB 92; Fig.1) is deposited in the photographic collection of the herpetological collection of the Centro de Investigaciones Biológicas, Universidad Autónoma del Estado de Hidalgo. This voucher represents a new municipality record, with the closest published locality at ca. 4.76 km to the S (airline distance) in the vicinity of Ejido Sierra de las Navajas, Municipio de Singuilucan, Hidalgo (CH-CIB 37; see Fernández-Badillo et al., 2016).

Fig 1. An adult *Crotalus intermedius* (CH-CIB 92) from Municipio de Omitlán de Juárez, Hidalgo, Mexico.
© Raúl Hernández-Jandete

Acknowledgments.—A special thanks goes to Gustavo A. Rivera-Milanés for providing the photographic equipment, and to Irene Goyenechea for allowing us to deposit the photo in the photographic collection of the Herpetological Collection of the Centro de Investigaciones Biológicas. The fieldwork was conducted under collecting permit SGPA/DGVS/09687/16.

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New herpetofaunal distribution records for the state of Oaxaca, Mexico

In our effort to increase the knowledge of the distribution of the Oaxacan herpetofauna, herein we provide new municipality records for 14 species in the state, and also include information on the natural history of some species. Photo vouchers are deposited at the University of Texas at El Paso (UTEP)'s Biodiversity Collections (Herpetology Observations), and collected specimens are deposited in the herpetological collection of the Centro de Investigaciones Biológicas (CIB) of the Universidad Autónoma del Estado de Hidalgo.

Amphibia: Anura

Family Bufonidae

***Rhinella horribilis* Wiegmann, 1833.** MEXICO: OAXACA. Municipio de San Bartolo Coyotepec, ca. 820 m S of Presa La Candelaria (16.947955°N, -96.680849°W; datum WGS 84); elev. 1,600 m; 6 October 2016; Pablo Rogelio Simón-Salvador. A second individual was found ca. 800 m N of Presa La Candelaria (16.961191°N, -96.677236°W; datum WGS 84); elev. 1,618 m; 18 June 2017; Arturo Rocha. These individuals (photo voucher UTEPObs:Herp:108, UTEPObs: Herp:109; Fig. 1A and 1B, respectively) represent a new municipality record, with the closest reported locality ca. 11.6 km (straight line) to the NW in the vicinity of Nazareno, Municipio de Santa Cruz Xoxocotlán (Calderón-Patrón et al., 2012); this record is of a toad found on pellets regurgitated by a Barn Owl (*Tyto alba*). As far we are aware, our records represent the second municipality for this species in the Valles Centrales de Oaxaca (VCO) physiographic region (see Mata-Silva et al., 2015). Both individuals were found in secondary vegetation, in what formerly consisted of thorn scrub woodland.

Family Eleutherodactylidae

***Eleutherodactylus syristes* (Hoyt, 1965).** MEXICO: OAXACA. Municipio de Santa Catarina Juquila, ca. 2 km E of Santa Catarina Juquila (16.235446°N, -97.273292°W; datum WGS 84); elev. 1,537 m; 14 June 2017; Eduardo Mata-Silva, Dominic L. DeSantis, Elí García-Padilla, Larry David Wilson, Julio Cesar Bolán-Mata, and Vicente Mata-Silva. This individual (photo voucher UTEPObs:Herp:110; Fig. 1C) represents a new municipality record, filling a gap between the closest reported localities at ca. 14 km (straight line) to the E from a locality cited as "approx. 8.2 km S of turn-off to Santa Catarina Juquila (MZFC 21686-7)" in Municipio de San Juan Lachao, and ca. 106 km to the WNW at a locality cited as "Road between Putla and Pinotepa, 12.3 km S of Putla (MZFC 23938)" (García-Vázquez et al., 2016). The individual was found under a rock along a creek at 1320 h, in an area that formerly consisted of pine-oak forest but recently was replaced by a cornfield.

Family Rhinophrynidae

***Rhinophrynus dorsalis* Duméril & Bibron, 1841.** MEXICO: OAXACA. Municipio de San Pedro Mixtepec, San Pedro Mixtepec (15.979169°N, -97.075114°W; datum WGS 84); elev. 250 m; 17 June 2017; Dominic L. DeSantis, Elí García-Padilla, Eduardo Mata-Silva, Larry David Wilson, Julio Cesar Bolán-Mata, and Vicente Mata-Silva. This individual (photo voucher UTEPObs:Herp:111; Fig. 1D) represents a new municipality record, with the closest reported locality ca. 33 km (straight line) to the W, at a locality cited as "8 km E of Río Grande", Municipio de Villa de Tututepec de Melchor Ocampo (Webb and Baker, 1969). The toad was found during a heavy rain at 2308 h, among hundreds of other individuals that were calling, in a seasonal pond (ca. 15 m in diameter) located in an urban lot surrounded by several concrete houses; we also saw adults of *Smilisca baudinii, Trachycephalus typhonius*, and *Kinosternon oaxacae*. Sadly, the pond is likely to disappear in the near future.

Reptilia: Squamata (lizards)

Family Sphenomorphidae

***Sphenomorphus assatus* Cope, 1864.** MEXICO: OAXACA. Municipio de Villa de Sola de Vega, near La Cumbre (16.462249°N, -97.011741°W; datum WGS 84); elev. 2,079 m; 23 June 2017; Elí García-Padilla, Eduardo Mata-Silva, Arturo Rocha, Larry David Wilson, Julio Cesar Bolán-Mata, and Vicente Mata-Silva. This voucher (CIB-5115; Fig. 1E) represents a new municipality record, and also the first record for the Montañas y Valles del Occidente physiographic region (Mata-Silva et al., 2015), with the closest reported locality ca. 33 km (straight line) to the S near the vicinity of Santa Rosa, Municipio de San Juan Lachao. The individual, an adult gravid female, was found under a log in pine-oak forest; four days later she deposited two eggs, each measuring 12 × 6 mm.

Reptilia: Squamata (snakes)

Family Colubridae

***Drymobius chloroticus* (Cope, 1886).** MEXICO: OAXACA. Municipio de Santa Catarina Juquila, ca. 5 km (straight line) E of Santa Catarina Juquila (16.241427°N, -97.243522°W; datum WGS 84); elev. 1,969 m; 17 June 2017; Elí García-Padilla, Dominic L. DeSantis, Larry David Wilson, Eduardo Mata-Silva, Julio Cesar Bolán-Mata, and Vicente Mata-Silva. This individual (photo voucher UTEPObs:Herp:112; Fig. 1F) was found dead on a road (DOR) through pine-oak forest. This voucher represents a new municipality record, with the closest record ca. 10 km (straight line) to the ENE at a locality cited as "25.2 km N of San Gabriel Mixtepec" (KUH-137657; Vert.Net, 2017).

***Leptophis diplotropis* (Günther, 1872).** MEXICO: OAXACA. Municipio de Santa Catarina Juquila, ca. 4.4 km (straight line) E of Santa María Yolotepec (16.246720°N, -97.216123°W; datum WGS 84); elev. 2,154 m; 17 June 2017; Elí García-Padilla, Dominic L. DeSantis, Larry David Wilson, Eduardo Mata-Silva, Julio Cesar Bolán-Mata, and Vicente Mata-Silva. This individual was found DOR in pine-oak forest (photo voucher UTEPObs:Herp:113; Fig. 1G), and represents a new municipality record, with the closest report ca. 28 km (straight line) to the SE at a locality cited as "11.6 km N of San Pedro Mixtepec" (KUH 137645; Vert.Net, 2017).

***Leptophis diplotropis* (Günther, 1872).** MEXICO: OAXACA. Municipio de San Juan Lachao, near Cerro del Vidrio (16.248279°N, -97.149311°W; datum WGS 84); elev. 1,824 m; 17 June 2017; Elí García-Padilla, Dominic L. DeSantis, Larry David Wilson, Eduardo Mata-Silva, Julio Cesar Bolán-Mata, and Vicente Mata-Silva. This individual was found DOR (photo voucher UTEPObs:Herp:114; Fig. 1H) and represents a new municipality record, filling a gap between the locality cited as "11.6 km N of San Pedro Mixtepec" (KUH 137645; Vert.Net, 2017) and the record from near Santa María Yolotepec (Municipio de Santa Catarina Juquila) cited herein.

***Salvadora mexicana* (Duméril, Bibron & Duméril, 1854).** MEXICO: OAXACA. Municipio de San Juan Lachao, Lachao 3 (16.209611°N, -97.108018°W; datum WGS 84); elev. 1,825 m; 16 June 2017; Dominic L. DeSantis, Elí García-Padilla, Larry David Wilson, Eduardo Mata-Silva, Julio Cesar Bolán-Mata, and Vicente Mata-Silva. This individual (photo voucher UTEPObs:Herp:115; Fig. 1I) represents a new municipality record, with the closest reported locality ca. 35 km (straight line) to the S in the vicinity of Puerto Escondido, Municipio de San Pedro Mixtepec (Mata-Silva et al., 2012). The snake was found in cloud forest under a pile of old metal sheets. This new locality also represents an elevational record for this species, with the previously known maximum elevation reported as 1,200 m (Wilson and Johnson, 2010).

***Tantilla rubra* Cope, 1863.** MEXICO: OAXACA. Municipio de San Gabriel Mixtepec, ca. 2.5 km (straight line) NE of San Gabriel Mixtepec (16.057500°N, -97.077839°W; datum WGS 84); elev. 860 m; 17 June 2017; Dominic L. DeSantis, Elí García-Padilla, Eduardo Mata-Silva, Larry David Wilson, and Vicente Mata-Silva. This individual (photo voucher UTEPObs:Herp:116; Fig. 1J) was found DOR in an area containing remnants of tropical dry forest. This voucher represents a new municipality record, with the closest records ca. 12.3 km (straight line) to the S in the vicinity of Santa Rosa, Municipio de San Juan Lachao (UCM-52611-12; see Wilson and Mata-Silva, 2014).

Family Dipsadidae

***Imantodes gemmistratus* (Cope, 1861).** MEXICO: OAXACA. Municipio de San Gabriel Mixtepec, ca. 5 km (straight line) S of San Gabriel Mixtepec (16.050522°N, -97.072654°W; datum WGS 84); elev. 742 m; 17 June 2017; Dominic L. DeSantis, Elí García-Padilla, Eduardo Mata-Silva, Larry David Wilson, and Vicente Mata-Silva. This individual (photo voucher UTEPObs:Herp: 117; Fig. 1K) represents a new municipality record, with the closest reported locality ca. 68 km (straight line) to the ESE at a locality cited as "6 km N of Pochutla" (LSUMZ 39536; Vert.Net, 2017). The snake was found DOR in an area containing remnants of tropical dry forest.

***Leptodeira maculata* (Hallowell, 1861).** MEXICO: OAXACA. Municipio de San Pedro Mixtepec, ca. 7 km (straight line) N of San Pedro Mixtepec (16.047013°N, -97.0733144°W; datum WGS 84); elev. 744 m; 17 June 2017; Dominic L. DeSantis, Elí García-Padilla, Eduardo Mata-Silva, Larry David Wilson, and Vicente Mata-Silva. This individual (photo voucher UTEPObs:Herp:118; Fig. 1L) represents a new municipality record, with the closest reported locality ca. 16 km (straight line) to the SW at a locality cited as "17.8 km NW of Puerto Escondido" (KUH 137630; Vert.Net, 2017), in Municipio de Villa de Tututepec de Melchor Ocampo. The snake was found DOR in an area containing remnants of tropical dry forest.

***Tropidodipsas philippii* (Jan, 1863).** MEXICO: OAXACA. Municipio de Santa Catarina Juquila, ca. 3.8 km (straight line) E of Santa Catarina Juquila (16.239551°N, -97.254115°W; datum WGS 84), elev. 1,812 m.; 17 June 2017. Dominic L. DeSantis, Elí García-Padilla, Larry David Wilson, and Vicente Mata-Silva. The specimen (CIB-5114; Fig. 1M) is deposited in the herpetological collection of the Centro de Investigaciones Biológicas of the Universidad Autónoma del Estado de Hidalgo. The snake was found DOR in pine-oak forest and represents a new municipality record, with the closest reported locality ca. 17.4 km (straight line) to the ESE at a locality listed as Río Sal, Municipio de San Juan Lachao (Kofron, 1987).

Family Leptotyphlopidae

***Epictia phenops* (Cope, 1875).** MEXICO: OAXACA. Municipio de San Pedro Juchatengo, 2.3 km NE of La Cruz (16.321831°N, -97.113286°W; datum WGS 84), elev. 1,183 m.; 14 June 2016; Larry David Wilson, Vicente Mata-Silva, Elí García-Padilla, and Dominic DeSantis. The specimen (CIB-5091; Fig. 1N) is deposited in the

herpetological collection of the Centro de Investigaciones Biológicas of the Universidad Autónoma del Estado de Hidalgo. The snake was found crossing a paved road through secondary tropical dry forest at 1120 h, and represents a new municipality record.

Family Viperidae

***Crotalus simus* Latreille, 1801.** MEXICO: OAXACA. Municipio de San Pedro Totolápam, ca. 12.4 km (straight line) ENE of San Pedro Totolápam (16.707132°N, -96.193000°W; datum WGS 84); elev. 1,025 m; 4 June 2017; César Mayoral-Halla and Brenda Fernanda Montiel-Altamirano. This individual (photo voucher UTEPObs:Herp:119; Fig. 1O) represents a new municipality record and also the first record for the Montañas y Valles del Centro physiographic region (see Mata-Silva et al., 2015), with the closest reported locality ca. 127 km (straight line) to the E at a locality cited as "10 road miles S of Lagunas" (LSUMZ 79901; Vert.Net, 2017). The snake was found crossing a dry creek in tropical dry forest, near an illegal dumping site.

Fig. 1. Species and the municipalities where they were collected: (A, B) *Rhinella horribilis* from San Bartolo Coyotepec; (C) *Eleutherodactylus syristes* from Santa Catarina Juquila; (D) *Rhinophrynus dorsalis* from San Pedro Mixtepec; (E) *Sphenomorphus assatus* from Villa de Sola de Vega; (F) *Drymobius chloroticus* from Santa Catarina Juquila; (G) *Leptophis diplotropis* from Santa Catrina Juquila; (H) *Leptophis diplotropis* from San Juan Lachao; (I) *Salvadora mexicana* from San Juan Lachao; (J) *Tantilla rubra* from San Gabriel Mixtepec; (K) *Imantodes gemmistratus* from San Gabriel Mixtepec; (L) *Leptodeira maculata* from San Pedro Mixtepec; (M) *Tropidodipsas philippii* from Santa Catarina Juquila; (N) *Epictia phenops* from San Pedro Juchatengo; and (O) *Crotalus simus* from San Pedro Totolápam.

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MISCELLANEOUS NOTES

Rediscovery of *Bromeliohyla dendroscarta* at the type locality: a threatened treefrog surviving in a highly human modified landscape in Mexico

The lack of sightings or records for certain amphibian species has led several organizations to propose lists of species that must be sought in nature, because they require urgent protection. The Amphibian Survival Alliance (ASA) listed 251 species that have not been recorded for over 10 years (in some cases nearly two centuries) and called them "lost species." In recent years, 30 of these 251 species have been rediscovered (ASA, 2017). The International Union for Conservation of Nature (IUCN) lists 113 species of amphibians that have not been recorded from between 10 and 90 years, which IUCN has tagged as Possibly Extinct or Possibly Extinct in Wild (IUCN, 2017). Although 92 of 113 species (81.4%) in this list were evaluated between 2004 and 2008, more recent assessments are necessary to more accurately determine the number of species that should be given this status. For its part, the EDGE (Evolutionary Distinct and Globally Endangered) of Existence program, launched by the Zoological Society of London, proposed a list of 799 species of amphibians in need of urgent protection; these species are characterized by their unique evolutionary histories, and all are highly threatened with extinction (ZSL, 2008).

The failure to observe or record a species might have resulted from its disappearance at known collection sites or from a decline in its populations. Such results, however, also can be related to such methodological problems as applying limited or insufficient search efforts, the difficulty in reaching historical collection sites, using an inadequate search method with respect to the particular habits of a species, dynamic breeding phenologies (Delia et al., 2013), or difficulties in detecting a species because of its body size (Lee et al., 2016).

In Mexico, the IUCN considers 27 species of amphibians as Possibly Extinct, the ASA regards 34 as Lost Species, and the EDGE program lists 93 as priority species for conservation. In total, 112 species of Mexican amphibians (29%) are included in at least one of these lists (ZSL, 2008; ASA, 2017; IUCN, 2017). In recent years, fieldwork in different areas of Mexico has resulted in the rediscovery of at least 10 amphibian species from these lists, including seven anuran (Heimes and Aguilar, 2011; Delia et al., 2013; Caviedes-Solis et al., 2015; Barrios-Amorós et al., 2016; Grünwald et al., 2016) and three caudate (Rovito, 2010; Sandoval-Comte et al., 2012) species.

One of the species included in the ASA, IUCN, and EDGE lists is *Bromeliohyla dendroscarta* (Taylor, 1940), a small treefrog (maximum snout–vent length [SVL] = 34.6 mm) that inhabits cloud forest, and in which egg deposition and the development of the tadpoles takes place in bromeliads (Duellman, 2001). This species is endemic to Mexico and occurs in the mountainous region of central Veracruz and northern Oaxaca, at elevations from 450 to 1,900 m (Duellman, 2001; Frost, 2017). *Bromeliohyla dendroscarta* has been assessed as Critically Endangered (CR) by the IUCN (Santos-Barrera and Canseco-Márquez, 2004), and is listed as Subject to Special Protection (Pr) in the Mexican government's threatened species list (SEMARNAT, 2010). Deforestation and disturbance of the cloud forest occupied by this species (Duellman, 2001) apparently are major threats to its persistence, and because it has not been found in suitable habitats since 1974 (Santos-Barrera and Canseco-Márquez, 2004; ASA, 2017; IUCN, 2017) the chytrid fungus, *Batrachochytrium dendrobatidis*, has been suggested as a relevant threat to its survival (Santos-Barrera and Canseco-Márquez, 2004).

As noted above, although *B. dendroscarta* reportedly was last seen in 1974, recent reports of its occurrence are available for some localities. Ramírez-Bautista et al. (2010, 2014) and Hernández-Salinas and Ramírez-Bautista (2012) reported this species from the state of Hidalgo, in localities north of its known distribution; in a footnote, however, Lamoreux et al. (2015: 121) noted that although Hernández-Salinas and Ramírez-Bautista (2015) reported finding four individuals in cloud forest during surveys in 2007–2008, they were "unable to judge the veracity of these claims." Cabrera-Guzman and Reynoso (2012: 3,252) listed "*Bromeliohyla* cf. *dendroscarta*" from San Andrés Tuxtla, Veracruz, perhaps because Duellman (1970: 436) noted that specimens from this area at the KU museum "are poorly preserved and formalin blackened," and thus Duellman was "not certain that they belong with this species." Hernández-Benítez et al. (2012) reported the rediscovery of *B. dendroscarta*, in the Sierra Negra of Puebla, a new state record for this species. Conversely, *B. dendroscarta* was not recorded in searches conducted by

Lips et al. (2004) and Delia et al. (2013) in historical localities in Oaxaca, and by Cerón-de la Luz et al. (2016) at the type locality in Cuautlapan, Veracruz.

As part of a study on ecology and conservation of amphibians in central Veracruz, in 2010 and 2015 we conducted searches on Cerro Chicahuaxtla, Cuautlapan, Municipio de Ixtaczoquitlan. Cerro Chicahuaxtla currently is covered by fragmented cloud forest, in addition to secondary vegetation and shaded coffee plantations in the upper and intermediate levels (Fig. 1A), while chayote, sugarcane plantations, and human settlements dominate the lower level. Historically, Cuautlapan has been a locality for collecting amphibians; 28 species have been recorded from this area, mostly by Edward Taylor and Hobart Smith, but more recently by different authors (see Cerón-de la Luz et al., 2016).

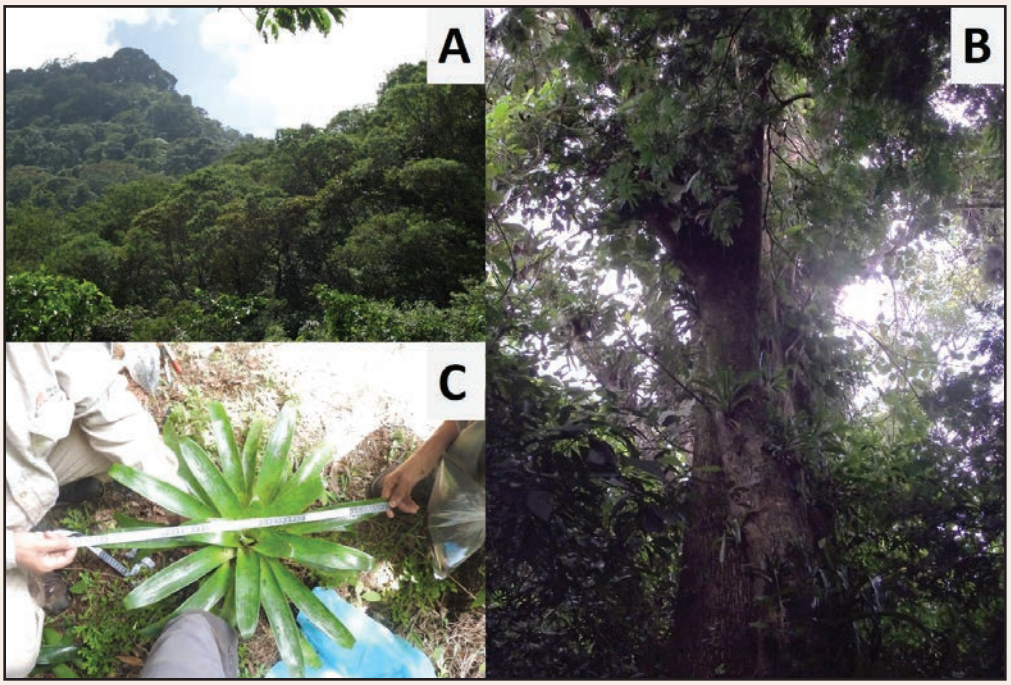

Fig. 1. Cerro Chicahuaxtla, Cuautlapan, Municipio de Ixtaczoquitlan, Veracruz: (A) Panoramic view of the habitat; (B) location of the bromeliads in the sampled trees; and (C) a bromeliad (*Tillandsia* sp.) in which egg clutches and tadpoles of *Bromeliohyla dendroscarta* were found. © Adriana Sandoval-Comte (A, B) and Paulina García-Bañuelos (C)

Our sampling method for recording amphibians consisted of visual encounter surveys (Crump and Scott, 1994) in microhabitats commonly occupied by amphibians, including bromeliads in trees, at heights from 4 to 20 m (Fig. 1B). In July, September, and October of 2010, we sampled shaded coffee plantations and a small portion of cloud forest. We applied a total sampling effort of 96 person-hours, but did not observe any *B. dendroscarta*. On 12 July 2015, we sampled one hectare area located within a cloud forest fragment of 30 hectares (18°51'27"N, 97°0' 46"W; datum WGS 84; elev. 1,550 m), where we observed two clutches of anuran eggs, each consisting of approximately 20 eggs, and 10 tadpoles in a bromeliad located at a height of 3.6 m from the ground. Subsequently, in four other bromeliads in three other trees, we observed a total of 30 tadpoles of different sizes. All of the bromeliads that contained eggs or tadpoles were of the genus *Tillandsia*, and all were about 60 cm tall and 65 cm in diameter (Fig. 1C). We collected six tadpoles that measured approximately 2 cm in total length, and starting on 13 July maintained them in captivity in a spherical, 3-liter, glass container. The six tadpoles had a depressed body, narrow caudal fins, a small and ventral mouth, two upper and four lower rows of teeth, a pale cream color on the back, and a transparent belly (Fig. 2A, B). After maintaining the tadpoles for three months in captivity, we observed the first post-metamorphic individuals; subsequently, in January of 2016, these individuals measured 16–19 mm (SVL), 9–11 mm in tibia

length (TL), and an SVL/TL ratio of 0.5. The dorsal coloration of the recently metamorphosed frogs was yellow, with small, irregular dark spots present on the dorsal portion of the arms and legs; the belly and throat were immaculate white, and the color of the iris was golden bronze (Fig. 2C, D). The morphological and coloration characteristics of the larvae and adults agree with those given in the diagnosis presented for *B. dendroscarta* by Taylor (1940) and Duellman (2001). We did not observe signs of chytrid fungus infection in any of the individuals collected. Five individuals eventually died in captivity, of which three were preserved and deposited in the Colección de Anfibios y Reptiles del Instituto de Ecología, A.C. (CARIE-1219–1221).

Our finding of *B. dendroscarta* in Cerro Chicahuaxtla represents the most recent sighting of this species at the type locality since 1970. The tadpoles recorded in July supplement the larval record for August at the same locality (Taylor, 1940), in addition to records collected in January, February, and August from El Mirador and near Huatusco, Veracruz, 40 and 28 km north of the type locality, respectively, suggesting that this species reproduces at various times during the year. The finding of *B. dendroscarta* at the type locality provides an opportunity to study this species in greater detail, and to supplement other information that can be used for its protection. Exhaustive searches are necessary in the fragmented cloud forest canopy at this locality in an effort to find adult individuals, to generate updated and detailed information on the population, to identify the periods and patterns of activity, to obtain additional data on distribution, and to recognize the use of microhabitats. Moreover, the shade-grown coffee plantations that surround the fragmented cloud forest should be examined to assess if they can serve as refuges for the species, as documented for other amphibian species in the region (Pineda et al., 2005). Although we did not find evidence of chytrid fungus in the tadpoles we collected, this matter requires a more extensive in both adults and larvae of this population, especially since the presence of the fungus at the type locality is documented to have occurred since the 1970s (Cheng et al., 2011). Given the amount of habitat transformation that has occurred in parts of Cerro Chicahuaxtla and the surrounding region, protection of the remaining forest fragments is necessary to increase the chances of survival for *B. dendroscarta*, a species with a high risk of extinction, in addition to that of the coexisting amphibian fauna.

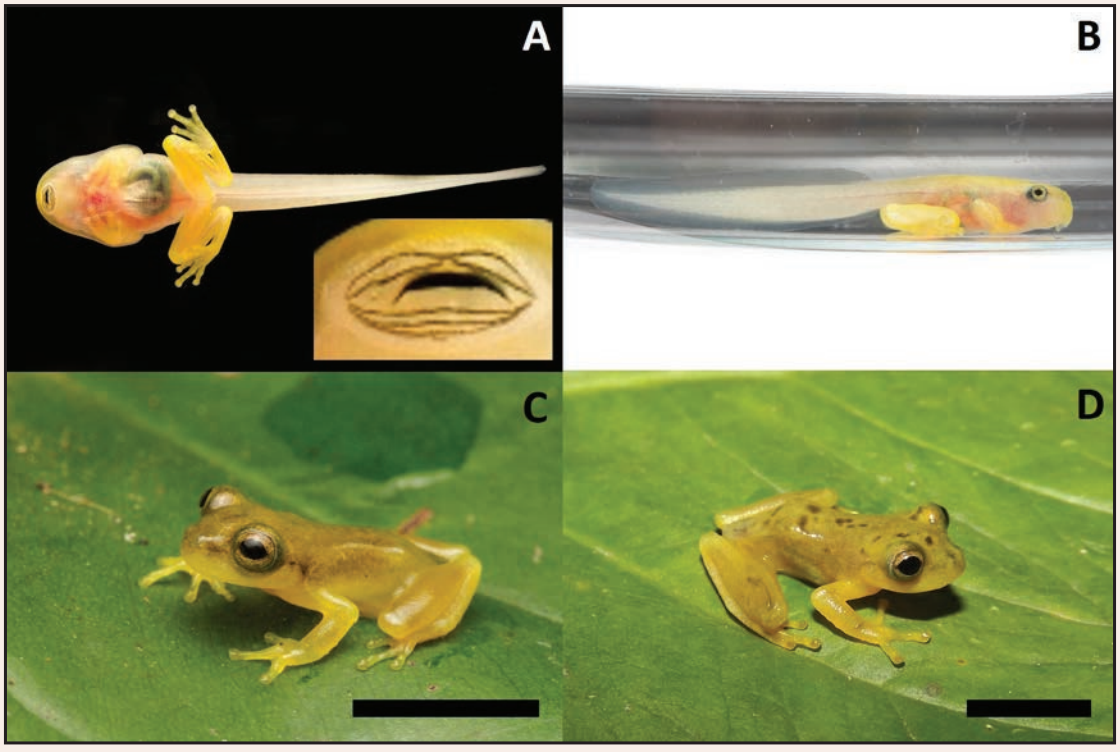

Fig. 2. Individuals of *Bromeliohyla dendroscarta* from Cerro Chicahuaxtla, Cuautlapan, Municipio de Ixtaczoquitlan, Veracruz: (A) ventral view and oral disc of a tadpole; (B) lateral view of a tadpole; and (C, D) view of a post-metamorphic individual. Black bar = 10 mm.

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A new locality and elevational range extension for *Rhinophrynus dorsalis* Duméril & Bibron, 1841 (Anura: Rhinophrynidae), and a noteworthy record for *Hypopachus variolosus* (Cope, 1866) (Anura: Microhylidae) in Guatemala

The Mesoamerican Burrowing Toad (*Rhinophrynus dorsalis*) and the Sheep Frog (*Hypopachus variolosus*) range from southern Texas, United States, to northwestern Costa Rica (Fouquette, 1969; Santos-Barrera et al., 2010a, b; Frost, 2017). These anurans are fossorial and spend most of their time underground, and emerge from the soil after heavy rains and gather in temporary ponds to breed (Foster and McDiarmid, 1983; Campbell 1998, Lee, 2000; Savage, 2002; Köhler, 2011). Both species occur in habitats such as savannas and open dry forest, and modified habitats such as pastures and plantations, in very dry to wet areas (Acevedo et al., 2010; Wilson and Johnson, 2010;

Köhler, 2011). Because of their ability to occupy human-altered environments, populations of both species are not considered as threatened (Santos-Barrera et al., 2010a,b). Despite their loud and far-carrying calls during their short breeding season (Campbell, 1998; Savage, 2002; Sandoval et al., 2015), these toads can be overlooked because of their fossorial lifestyle for most of the year. *Rhinophrynus dorsalis* has been reported at elevations from sea level to 700 m (Wilson and Johnson, 2010; Köhler, 2011). Here I report a breeding population of *R. dorsalis* found at an elevation of 1,400 m, as well as a noteworthy record of *H. variolosus* from the department of Huehuetenango, Guatemala, discovered during casual observations in the area. To describe the habitat, I mapped the vegetation types along a 500 m radius of the pond, based on satellite images with a resolution of 0.5 m, from 30 April 2016, and personal observations during excursions in the area. I used software ESRI ArcView 3.2 for the spatial analyses. The nomenclature of scientific names follows Frost (2017).

I observed and photographed *R. dorsalis* and other anurans in Chaculá (15°58'16.9"N, 91°39'04.1"W; WGS 84), Municipio Nentón, Departamento de Huehuetenango, Guatemala. Voucher photographs are deposited at the University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8893–96). Chaculá is located in the northern foothills of the Sierra Los Cuchumatanes (Fig. 1A). The climate in the area is characterized by a mean minimum annual temperature of 15°C and a mean maximum annual temperature of 26°C, the mean annual precipitation is 1,600 mm, and the mean monthly precipitation ranges from 60 to 100 mm during the dry season (February–May) and from 150 to 400 mm during the rainy season (May–January), with June being the wettest month (MAGA, 2002).

The natural vegetation of the area is dry oak forest, but due to agricultural activities much of the forest has been replaced by human-altered habitat. The temporary pond where *R. dorsalis* was observed was part of a cattle-grazing area. The vegetation within a circular radius of 500 m (78.5 ha) around the pond was as follows: oak forest (52.3%), hedges, shrubbery, and open woodland (17.9%), pasture (15.6%), conifer plantation (6.3%), gallery forest along streams (4.8%), corn fields (1.8%), permanent water bodies (1.7%), temporary water bodies (0.3%), and buildings (0.2%).

On the rainy night of 1 June 2017, from 1900 to 2100 h, a loud cacophony of anurans caught my attention. I observed at least 300 *R. dorsalis* in a temporary pond located in cattle-grazing area at the elevation of 1,400 m (Fig. 1B). The males were vocalizing (Fig 1C) and several were in amplexus with females (Fig. 1D). Other anurans at the site included the following: > 500 *Smilisca baudinii* (Fig. 2A), five *Hypopachus variolosus* (Fig. 2B, C), > 100 *Incilius valliceps* (Fig. 2D), and 10 *Rhinella horribilis*.

The observation of the breeding population of *R. dorsalis* in Chaculá is noteworthy, because the elevation of 1,400 m represents a 700 m increase in the known elevational range of this species (Fouquette, 1969; Wilson and Johnson, 2010; Köhler, 2011). Also, the locality represents a distributional extension of more than 100 km from the previously documented range of *R. dorsalis* (Santos-Barrera et al., 2010a) (Fig. 1A).

The record of *H. variolosus* also is noteworthy. Although Chaculá is located within the documented elevational range of this species (0–2,200 m; Wilson and Johnson, 2010), it is located more than 100 km outside of the range reported by Santos-Barrera et al. (2010b; Fig. 2E). The new records for *R. dorsalis* and *H. variolosus* in Chaculá suggest that these species are more widely distributed in northern Central America and southern Mexico than previously documented (Figs. 1A, 2E). Because these records are based on casual observations, additional fieldwork in the department of Huehuetenango likely will yield new discoveries.

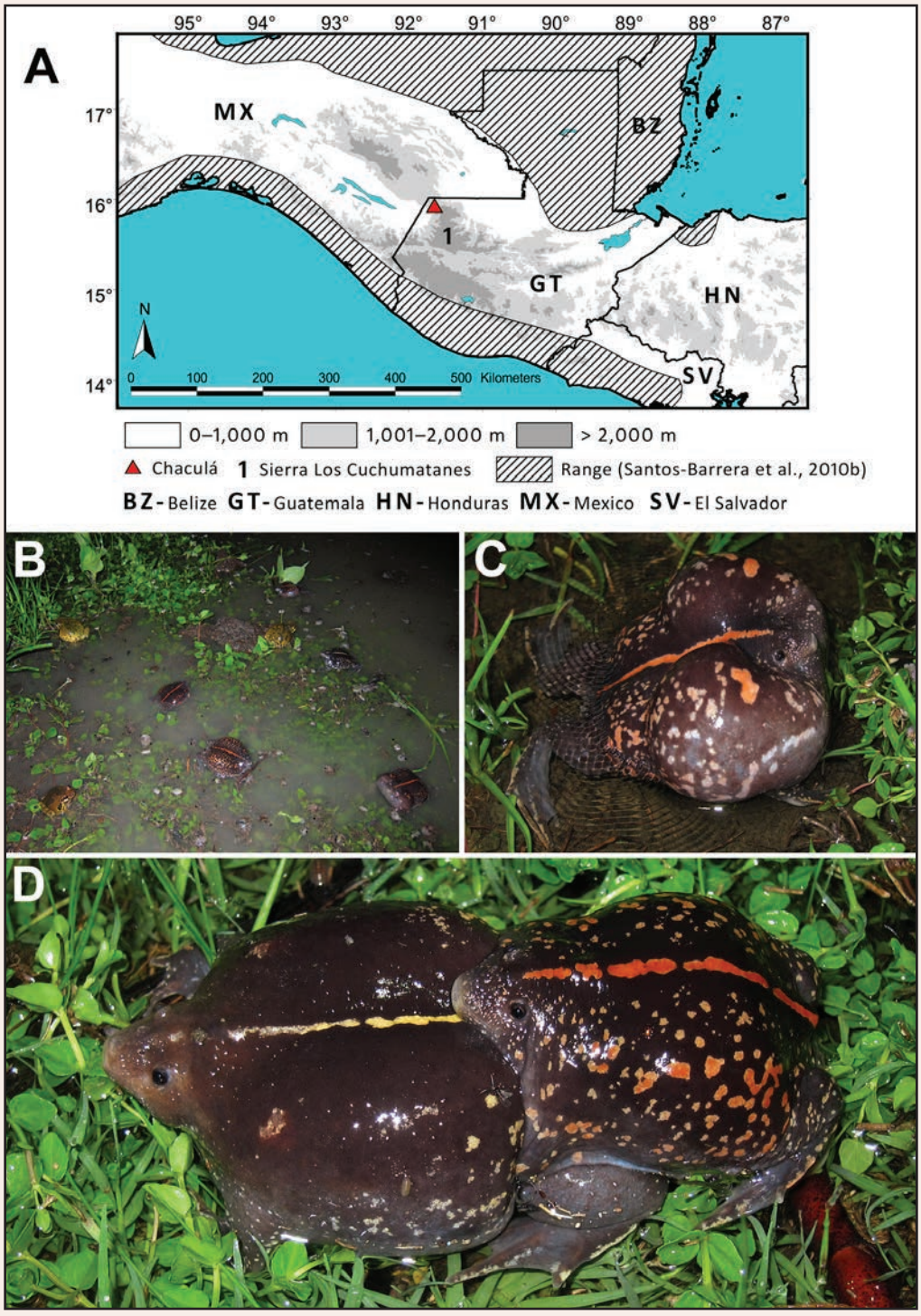

Fig. 1. Burrowing Toads, *Rhinophrynus dorsalis*, observed in Chaculá, Municipio Nentón, Departamento de Huehuetenango, Guatemala, on 1 June 2017. (A) Map showing the location of Chaculá and the previously reported distribution of *R. dorsalis* in southern Mexico and northern Central America (according to Santos-Barrera et al., 2010a); (B) five individuals of *R. dorsalis*, and three individuals of *Smilisca baudinii* in a temporary pond; (C) calling male of *R. dorsalis* (UTADC-8893); and (D) a pair of *R. dorsalis* in amplexus (UTADC-8894). © Knut Eisermann

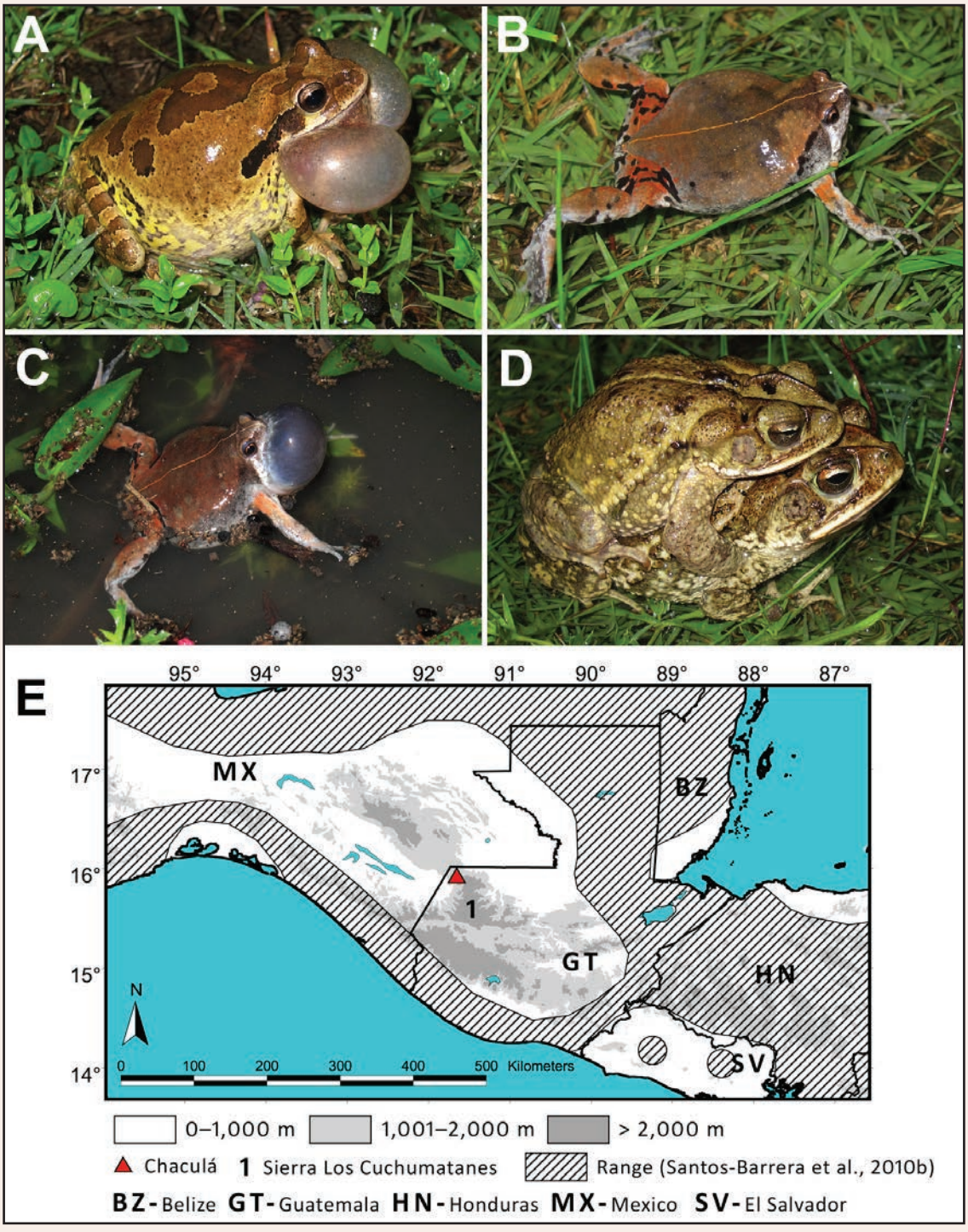

Fig. 2. Other anurans observed in a temporary pond in Chaculá, Municipio Nentón, Departamento de Huehuetenango, Guatemala, on 1 June 2017. (A) A calling male of *Smilisca baudinii*; (B, C) two individuals of *Hypopachus variolosus* (UTADC- 8895–96); D) a pair of *Incilius valliceps* in amplexus; and (E) a map showing the locality of *H. variolosus* in Chaculá and the previously reported range of this species in southern Mexico and northern Central America (according to Santos-Barrera et al., 2010b).

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