NATURE NOTES

Amphibia: Anura

Shrinking behavior in *Pristimantis pardalis* (Amphibia: Anura: Craugastoridae) from Costa Rica

Toledo et al. (2010) defined two main defensive behaviors in amphibians, depending upon the response of the prey to a certain aggressive stimulus by the predator. The most common and well known of these behaviors is death feigning (thanatosis), which is used as a defensive strategy by many species of amphibians, reptiles, and mammals to avoid predation by assuming a dead posture (Edmunds, 1974; Caro, 2014). For anurans, thanatosis can be defined as follows: the posture is motionless, even when the animal is touched, the limbs are loose, and the eyes usually are open. This behavior mostly is used by non-toxic terrestrial and semi-arboreal anurans. Another passive defensive behavior is what Toledo et al. (2010) called "shrinking," which is used mostly by toxic terrestrial and arboreal anurans and can be defined as: the posture is motionless and the eyes usually remain closed, the arms and forelimbs are bent and maintained close to the body, and generally contracted against the belly.

The genus *Pristimantis* is the largest known genus of terrestrial vertebrates (Padial et al. 2014). To date, passive or aggressive behaviors (thanatosis or shrinking) have not been reported for any species in this genus (Toledo et al. 2010; L. Toledo, pers. comm.). Herein we report a case of shrinking behavior in *Pristimantis pardalis* (Barbour, 1928), which entailed some peculiarities. This species is little known and almost no data is available on its biology and habitat, other than it is nocturnal and found on low vegetation within dense forest in the Premontane Rainforest zone, and that it occurs from southern Costa Rica to eastern Panama at elevations from 50 to 1,450 m (Savage, 2002; Leenders, 2016). In appearance this frog is small (males up to 19 mm, females up to 29 mm) with a dark gray to black dorsum and dark brown venter (according to Savage, 2002; but see ventral coloration in images below), with white and black flash markings on the groin (Savage 2002, Leenders 2016). Recently, an individual in Panama was found infected with carnivorous fly larvae that were in the process of consuming its intestines (Leenders, 2016).

While walking in Premontane Wet Forest (Savage, 2002) at Casa Tordesillas, Socorro de Platanares, Provincia de San José, Costa Rica (9°12'30"N, 83°41'01"W; elev. 988 m), we observed five individuals of *P. pardalis*. Two of them were females, and both acted in a similar fashion. The first female was perched vertically on a dry leaf at a height of 1.5 m (Fig. 1A). After photographing the frog for less than 1 min it appeared to release its grip and fell into the leaf litter, where it remained motionless with the limbs contracted against the body (Fig. 1B, C). This behavior lasted for several minutes, and at that point we placed the frog on a leaf to take more photographs. During this time it also remained motionless. We did not detect any specific odor during the encounter. Soon after we came across another female that displayed similar behavior. This individual was perched horizontally on a green leaf, and when we approached it contracted its body and remained motionless but did not fall into the leaf litter. Subsequently, we encountered three males, and none displayed death-feigning or shrinking behavior. After accidentally contacting one of these frogs with the lens of a camera, it jumped for at least 1 m; however, we could not locate the animal to see if he had undergone any apparent physical changes. The other two males we came across were difficult to photograph because they kept walking away slowly (Fig. 1D), and neither displayed shrinking behavior. We cannot provide a clear explanation as to why only the two females displayed this behavior, whereas the three males escaped by jumping or walking away.

The proposed "shrinking" behavior described by Toledo et al. (2010) normally is used by toxic species such as bufonids, and some hylids and phyllomedusids. In this case we do not have information on the toxicity of *P. pardalis*, although the black and white flash markings on the groin area of this species might be used to deter predators. The individuals that underwent the shrinking behavior, however, did not show their flash markings. Further, the two female *P. pardalis* did not close their eyes when displaying the shrinking behavior, as occurs with most species known to use this type of defensive mechanism (Toledo et al, 2010).

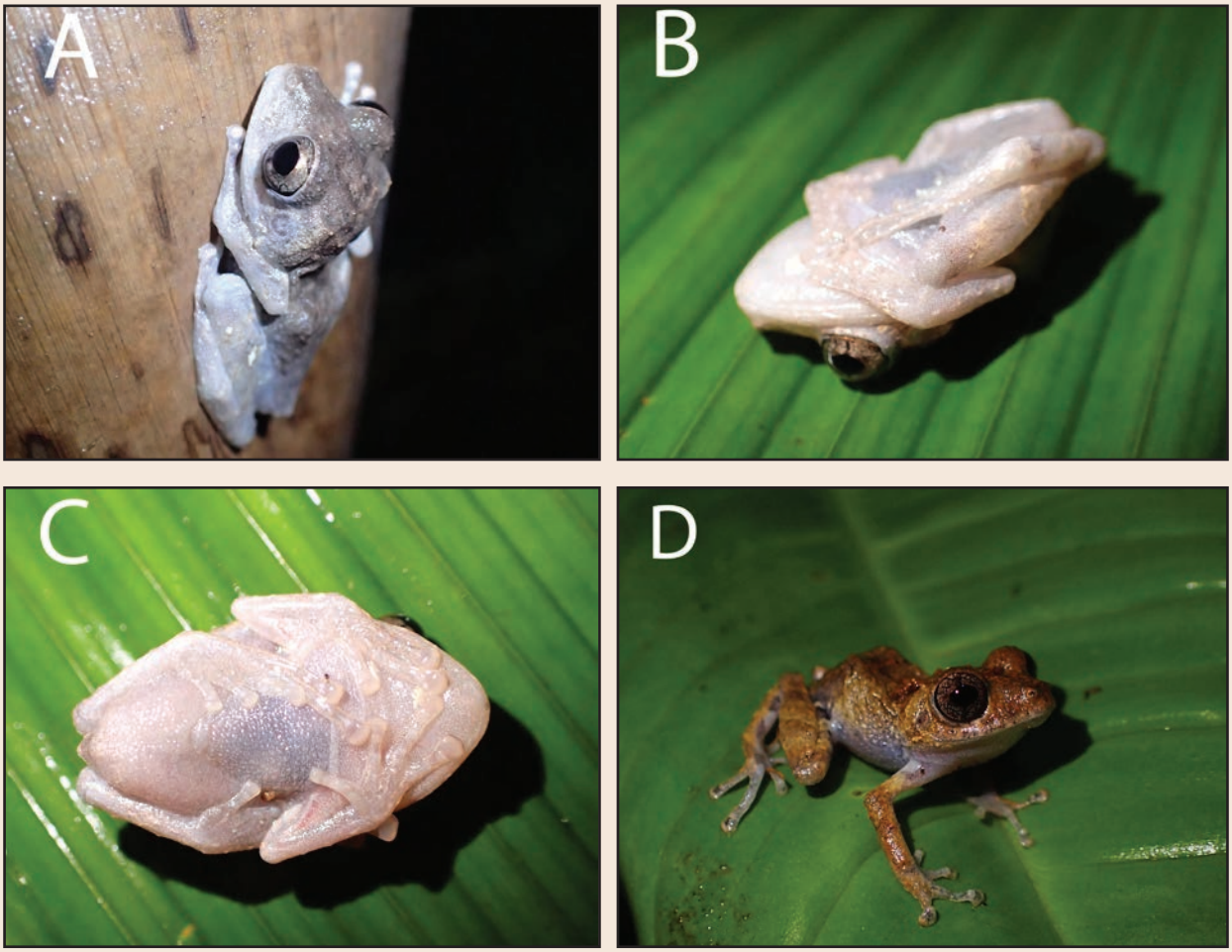

Fig. 1. Adult individuals of *Pristimantis pardalis* found at Casa Tordesillas, Socorro de Platanares, Provincia de San José, Costa Rica. (A) An adult female found in a vertical position on a dry leaf; (B) the same individual after falling to the ground, displaying shrinking behavior; (C) the second female displaying shrinking behavior; and (D) an adult male on a leaf prior to leaving the scene. © Cesar Barrio-Amorós

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Amphibia: Caudata

Clutch size of *Ambystoma velasci* (Dugès, 1888) *in situ*, from Guanajuato, Mexico. The genus *Ambystoma* in Mexico is represented by 18 species, of which 17 are country endemics (Wilson et al., 2013; Parra-Olea et al., 2014). The Plateau Tiger Salamander (*A. velasci*), one of these endemics, is distributed in northwestern Chihuahua along the eastern flanks of the Sierra Madre Occidental, southern Nuevo León to Hidalgo in the Sierra Madre Oriental, west to Zacatecas, and south into the Trans-Mexican Volcanic Belt (Frost, 2017), at elevations from 1,200 to 3,600 m (Lemos-Espinal and Dixon, 2013; Ramírez-Bautista et al., 2014; and references therein). Unfortunately, little information is available on the reproductive biology of this species, and here we provide information on a clutch of eggs and the larvae of *A. velasci* observed in the wild.

On 7 January 2017 at 1653 h, two of us (BDLCB, ALM) found a cluster of eggs of *A. velasci* that apparently were deposited by a single female in a permanent pond (Fig. 1) in the village of El Ocotero, Municipio de Xichú, Guanajuato, Mexico (21.309972°N, 100.127611°W; WGS 84; elev. 2,341 m). The pond is elongated in shape (4 × 1.5 m) with an average depth of 60 cm, and is located in an area containing remnants of pine-oak forest. A total of 53 eggs were observed, of which some had embryos in the last stage of development (Fig. 2) and others were in the process of hatching. The eggs were found approximately 12 cm from the surface in vegetation at the edge of the pond; the water temperature was 9.4 °C. Ramírez-Bautista, et al. (2014) indicated the clutch size of *A. velasci* as fewer than 100 eggs; these records, however, were obtained from captive individuals (A. Ramírez-Bautista, pers. comm.). Conversely, Lemos-Espinal and Dixon (2013: 23) noted that, "some 5,000 eggs are deposited a few centimeters under the water, singly, in rows, or in small clusters, which hatch in about two weeks." It is unclear, however, if these eggs were from a single clutch or from clutches deposited by several females.

Fig. 1. The pond where the eggs of *Ambystoma velasci* were found, at El Ocotero, Municipio de Xichú, Guanajuato, Mexico. © Adrian Leyte-Manrique

The number of eggs for *A. mexicanum*, *A. granulosum*, and *A. lermaense* has been reported to range from 300 to 900, 64 to 1,182, and 111 to 1,691, respectively (Salthe, 1969; Kaplan 1980; Aguilar-Miguel et al., 2009). These numbers, however, were based on captive individuals. Our observation provides a precise number for an egg clutch of *A. velasci* that presumably was deposited by a single female in the wild. From the conservation perspective, this species has been negatively affected by the loss of habitat and contamination resulting from human settlements

(Ramírez-Bautista et al., 2014), and these threats also are present in Guanajuato. Currently, this species is regarded as Least Concern by the IUCN (Shaffer et al., 2010), as Subject to Special Protection by SEMARNAT (2010), and Wilson et al. (2013) assessed it an Environmental Vulnerability Score (EVS) of 10, placing it in the lower portion of the medium vulnerability category.

Fig. 2. A close-up of the developing eggs deposited by an *Ambystoma velasci*. © Kevin Herroz-Hiriart

Acknowledgments.—We are grateful to Kevin Herroz-Hiriart for field assistance, and for providing photographic material.

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***Bolitoglossa yucatana*. (Peters, 1882). Troglodytism**. The Yucatan Mushroom-tongued Salamander, *Bolitoglossa yucatana*, is endemic to the Yucatan Peninsula and often is associated with limestone sinks called *cenotes* (Lee, 2000). Lee (1996) noted that in spite of its fully webbed feet this appeared to be a terrestrial species, but an adult individual later was found inside a large tank bromeliad (*Aechmea bracteata*) at a height of 4 m above the ground (Calderón et al., 2003; Galindo-Leal et al., 2003), suggesting that its habits are arboreal as well.

Lee (2000) indicated that surface activity in *B. yucatana* likely is restricted to the rainy season. Known records correspond to specimens found in terrestrial situations: in shallow soil at the base of tree stump, beneath surface debris in thorn forest, on roads at night in tropical evergreen forest, and beneath a log at the edge of a cenote (see Lee, 1996, and references therein). Lee (1996: 45) also noted that, "these salamanders probably sequester themselves deep within the recesses of the karsted limestone that abounds throughout their range."

On 13 August 2015 at 1230 h, while conducting a tour one of us (CCC) found an adult *B. yucatana* (Fig. 1) on limestone about 150 m from the entrance of a cave system called Pool Tunich or Cavernas del Río Secreto, Municipio de Solidaridad, Quintana Roo, Mexico (20°35'19.87"N; 87°08'05.67"W; WGS 84; elev. 8 m). A photographer who continually was exploring the site in those days mentioned that this individual had spent at least 15 days in the same location. The surrounding habitat at the entrance of the cave is a combination of tropical evergreen forest and secondary vegetation.

Fig. 1. An adult *Bolitoglossa yucatana* observed about 150 m from the entrance of the cave system called Cavernas del Río Secreto, Municipio de Solidaridad, Quintana Roo, Mexico. © Cecilia Cahum-Cahum

To date 14 species of amphibians, all Nearctic salamanders from the United States (genera: *Ensatina*, *Eurycea*, *Gyrinophilus*, *Hydromante*s, *Plethodon* and *Pseudotriton*), are known to temporally or exclusively inhabit caves or live in groundwater (Fenolio, 2016). To our knowledge, this is the first confirmed report of troglodytism in *B. yucatana*, a Neotropical species.

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Reptilia: Crocodylia

***Crocodylus acutus* (Cuvier, 1807). Ectoparasitism.** *Crocodylus acutus* is the most widely distributed crocodylian in the New World, as it inhabits coastal and lowland wetlands from Florida to the limits of mangrove forest in Peru (Thorbjarnarson et al., 2006). This species is listed as Vulnerable by the International Union for Conservation and Nature (IUCN), and in Appendix I of the Convention on International Trade in Endangered Species (CITES).

Belize once was a stronghold for the overall regional population of this species, but habitat destruction and pollution have become a threat. Consequently, the national status of *C. acutus* is under government review for listing this species as Endangered. In Belize, *C. acutus* primarily is found along the coast, as well as throughout the cayes and offshore atolls (Thorbjarnarson et al., 2006), but development along the coast (prime habitat for *C. acutus*) keeps pushing this species farther inland into historical *C. moreletii* territory (M. Tellez, unpublished). As *C. acutus* keeps dispersing it likely will encounter a new array of prey and parasites, and thus alter the existing host–parasite dynamics of inland aquatic ecosystems.

Leeches are generalist parasites of crocodylians that commonly are found in or around the mouth of their hosts; a few records of these ectoparasites, however, have been observed on the neck, legs, or abdomen of individuals (Tellez, 2013). The majority of the documented leeches are from the family Glossiphoniidae, a group of freshwater ectoparasites characterized by using their proboscis to feed off the blood of their vertebrate hosts (Sawyer, 1986). Species from this family of leeches are known vectors of such blood parasites as *Placobdella multilineata*, which

is known to infect *Alligator mississippiensis* with the blood parasite *Haemogregarina crocodilinorum* (Cherry and Ager, 1982). To date, leeches and the blood parasites they transmit have not been documented to have ill effects on wild crocodylians.

On 6 Jan 2017, the reptile keepers at The Belize Zoo noticed leeches inside and outside the mouth of "Brutus," a 3.3 m (total length) male *C. acutus* (Fig. 1A, B). The crocodile enclosure measures approximately 11 m × 6 m and about 3 m deep at its deepest point, and gradually becomes shallower near the banks. The water in the enclosure consists of a combination of rainwater and water pumped in from a freshwater holding pond located approximately 0.4 km west of the zoo. The substrate of the enclosure consists primarily of nutrient poor clay soils and natural vegetation. Through inspection via binoculars and photographs, the leech appears to be from the family Glossiphoniidae; however, we did not retrieve the ectoparasites, and thus this identification is tentative. To date, this is the first record of leeches parasitizing a crocodile in Belize, and the second record of leeches observed on a *C. acutus* from throughout its range (García-Grajales and Buenrostro-Silva (2011).

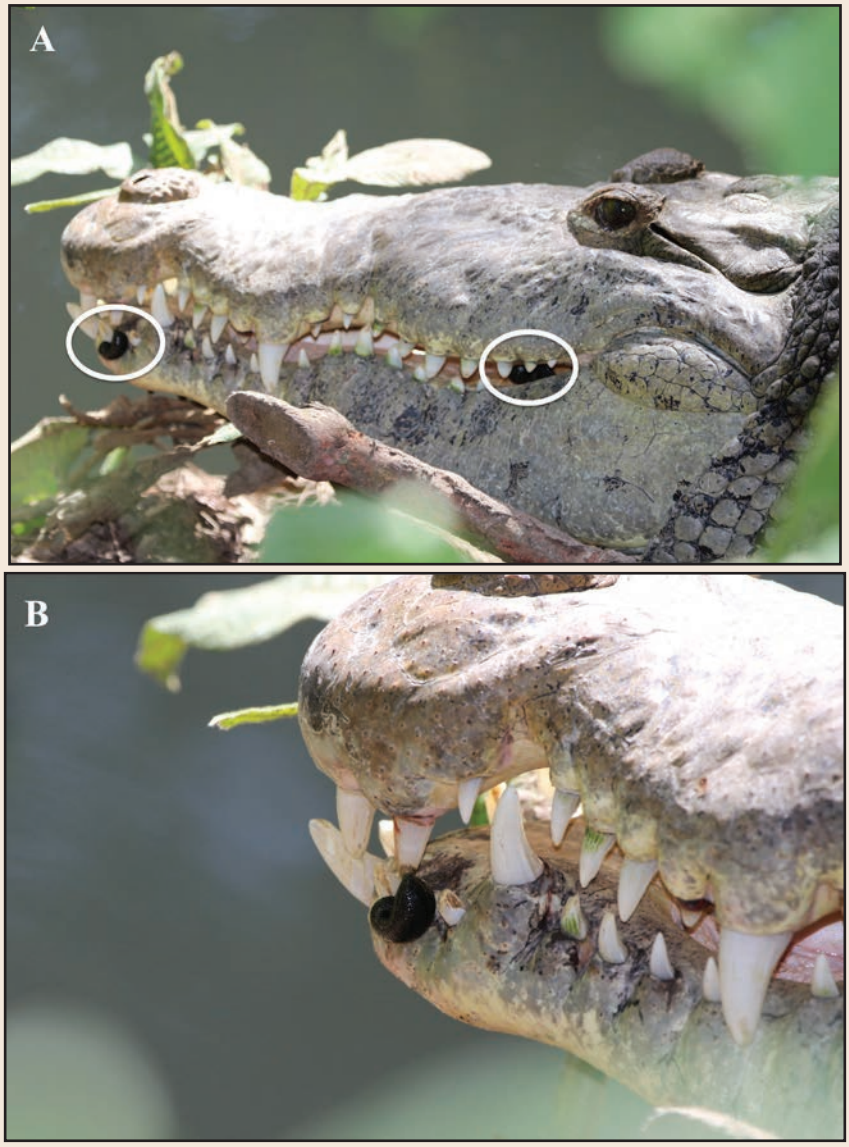

Fig. 1. (A) Leeches (circled) parasitizing the mouth of a *Crocodylus acutus* at the Belize Zoo, located 47 km west of Belize City; and (B) mouth a close-up of a leech parasitizing the lower jaw of the animal. © Danni Brianne

Acknowledgments.—We thank The Belize Zoo Animal Management Supervisors Tim Sho and Humberto Wohlers for discovering the leeches, and collaborating with the Crocodile Research Coalition on this finding.

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Reptilia: Squamata (lizards)

***Elgaria multicarinata* (Blainville, 1835). Diet.** The Southern Alligator Lizard, *Elgaria multicarinata*, is a medium–large species that occurs from Washington, United States, to Baja California, Mexico (Stebbins, 2003). The diet of this species is known to include a variety of insects and spiders (Knowlton, 1949), and small vertebrates such as baby mice, birds, and other lizards, including *Sceloporus occidentalis*, *S. graciosus, Uta stansburiana*, *Plestiodon skiltonianus*, and even conspecifics (Cunningham, 1956). This species can eat prey of considerable size; for example, there is a record of a captive female measuring 306 mm in total length (TL) consuming a 282 mm (TL) male conspecific (Gander, 1934).

Here we report an observation of *E. multicarinata* feeding upon a novel prey species. On 28 April 2017 at 1825 h, at Rancho El Coyote, Baja California, Mexico (31°2'21.09"N, 115°45'50.73"W; datum WGS 84; elev. 880 m), during a thermal ecology study in Chaparral habitat we observed an adult female *E. multicarinata* (142 mm snout–vent length [SVL], 320 mm TL, and body mass 48.3 g) swallowing a juvenile (67.4 mm SVL, and 221.3 mm TL, and body mass 7.39 g) *Aspidoscelis hyperythra*. The female's body temperature in the field was 24.1°C, the substrate temperature was 21.0°C, and the air temperature was 19.8°C. After collecting the data, we released the lizard at the site of capture.

According to Cunningham (1956), the relatively low temperature tolerances of *E. multicarinata* (21.4–28°C; also see Cunningham, 1966; Kingsbury, 1994) and its large size probably are the main factors that allow these relatively slow-moving lizards to capture and eat other small and thermophilic lizards, such as *Aspidoscelis* spp., especially when the temperature is decreasing or near sunset.

Acknowledgments.—We thank Rancho El Coyote for providing the accommodations and use of their facilities during our stay. We also thank Abelino Cota and the students at Fausto's Lab for field assistance, and Carla Sette for her comments on this manuscript. The collecting permit number (SGPA/DGVS/08184/16) was issued by the Dirección General de Vida Silvestre of México to Patricia Galina Tessaro. This project was supported by CONACyT (1319).

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River rocks as sleeping perches for *Norops oxylophus* and *Basiliscus plumifrons* in the Cordillera de Talamanca, Costa Rica

Lizards (Sauria: Squamata) are an extraordinarily diversified group of reptiles, with over 6,000 species worldwide (Uetz et al., 2016). In Costa Rica, they represent 36% (86) of all the reptile species; 37 of these lizards are anoles (*Norops*, *Dactyloa*: Dactyloidae), and three of the four species of basilisks (*Basiliscus*: Corytophanidae) occur in the country (Sasa et al., 2010; Hedges and Conn, 2012; G. Köhler 2010, 2011; G. Köhler and Vargas, 2010; G. Köhler et al., 2014; J. Köhler et al., 2012; J. J. Köhler et al., 2015).

Anoles are one of the most successful of all the lizard groups (Pianka and Vitt, 2003). Williams (1983) used the term "ecomorph" to describe anoles with specific morphologies associated with distinctive microhabitats on different Caribbean islands (Pianka and Vitt, 2003). Based on that assessment, anoles have served as highly successful models for studies on community ecology (Pianka and Vitt, 2003). In addition, anoles also display phenomenally high levels of species richness, along with ecomorphological variation in mainland Central- and South America (Pinto et al., 2008). Anoles avoid self-competition by using different parts of the habitat, and thus occupy a vast array of habitats with predictable evolutionary trajectories (Losos, 2009; Crandella et al., 2014). Consequently,

this taxonomically diversified and highly ecologically divergent group of Neotropical lizards has been considered to constitute an ideal model system for addressing biological questions (D'Cruze and Stafford, 2006). They also have been conceptualized as recurrently evolving toward the occupancy of a distinct set of niches (Losos et al., 2003), wherein each species is associated with a specific suite of morphological and ecological characteristics (Walguarnery et al., 2012).

The Stream Anole (*Norops oxylophus*) is a medium-large species that occurs at low elevations on the Atlantic versant from northeastern Honduras to eastern Costa Rica (McCranie and Köhler, 2015). Formerly, some authors have considered *N. lionotus* as a synonym of *N. oxylophus*, but here we follow McCranie and Köhler (2015, and references therein) in recognizing these taxa as separate species. This partially aquatic anole has been reported to occur in streamside habitats in humid tropical or subtropical forest and gallery forest, where individuals often are found at the water's edge (Fitch 1970, 1973; Savage, 2002). Fitch (1973) found most individuals perching on rocks in a stream or in the rocky riparian zone below high water mark during the day; some individuals, however, were found in dense vegetation, but always within 1–2 m of the water's edge. This species also has been reported to take refuge among the tree roots on stream banks or under debris on the adjacent forest floor, and at night to sleep on the streamside vegetation (McCranie and Köhler, 2015).

The Green Basilisk (*Basiliscus plumifrons*) is a large arboreal lizard (Taylor, 1956) with a distribution that extends from Honduras to Panama (Savage, 2002). This species inhabits lowland moist and wet forests and premontane slopes, mainly along stream courses but especially when the streams are located within mature forests (Savage, 2002). This lizard usually is associated with water, with notable tendencies for aquatic and arboreal habits (Savage, 2002). *Basiliscus plumifrons* has been observed perching on several substrate types, including among boulders at the edge of a swift mountain stream (Fitch, 1973). It also has been reported as fairly abundant in trees along riverbanks in the area of Tortuguero, in northeastern Costa Rica (Hirth, 1963). The biology of *B. plumifrons* is similar to that of *B. basiliscus* (Savage, 2002). Individuals of the latter species sleep on perches from near ground level to 20 m above ground level, and adults tend to favor perches near or above watercourses (Van Devender, 1983).

Parque Nacional Barbilla (9°56'31"N, 83°25'12"W) was established in 1982 as a biological reserve, and obtained its current status as a national park in 1997 (SINAC, 2016). Its topography consists of rough terrain in a mountainous region, its surface area is composed of 11,943 ha, and its location mostly is bordered by three rivers (Barbilla, Moravia, and Dantas) that largely form the boundary between the provinces of Cartago and Limón. Presently, this park is the last forested area (and floral and faunal refuge) in the central Atlantic area of the Cordillera de Talamanca (SINAC, 2016). This area receives a high amount of rainfall, and also experiences a wide a variety of climatic regimes on account its elevation, which ranges from 110 to 1,617 m (SINAC, 2016). The reptile fauna of the park has not been well documented, however, but theoretically should contain a high number of species.

We conducted a survey of the reptiles and other vertebrates at Parque Nacional Barbilla from 17 to 28 April of 2017. During this time we searched along three rivers (Barbilla, San Miguel, Dantas) at night for several hours. On the evenings of the 26th and 27th of April we hiked along the Río Dantas, near the indigenous community of Tsinikicha On 26 April 2017 at 2130 h, we encountered a male *N. oxylophus* perched on a rock in the river (09°59'13.4"N, 83°28'11.9"W; elev. 399 m), which protruded ca. 40 cm above the water level; a similar rock was positioned next to it (Fig. 1). The stream at that point was ca. 12 m wide, with the two rocks located in the middle of the river where the current was strong. The surrounding vegetation was gallery forest, with mature forest all around. The following night at ca. 2200 h, we observed a juvenile *B. plumifrons* perched on a boulder along the side of the river, but which extended well into the river and protruded ca. 2 m above the water level. The lizard was perched inside a crevice in the rock, near the middle of the boulder and facing the flowing water (Fig. 2). To our knowledge, this is the first observation of a nocturnal perch site for both *N. oxylophus* and *B. plumifrons* on a substrate with these characteristics.

We found little information on the nocturnal perch sites of these two relatively common lizards. Some of this information was anecdotal, such as that provided by Guyer and Donnelly (2005) when they discussed the capture of this species. These authors indicated that *B. plumifrons* slept on small trees or shrubs along streams and rivers. Additionally, Leenders, (2001) reported having observed juveniles basking on large boulders in a forest stream during the day, and that they avoided capture by diving into the water and clinging to the underside of rocks, where they hid in air-pockets; he also noted that this anole retreats into rock crevices during periods of inactivity, at night,

or when the air temperature is low. Nonetheless, Leenders (2001) did not specify that *N. oxylophus* sleeps on rocks in streams. Van Devender (1983) noted that the closely related *B. basiliscus* minimizes threats by sleeping on vegetation overhanging water, and when disturbed will fall or jump into the water.

Fig. 1. An adult male Stream Anole (*Norops oxylophus*) found sleeping on a rock in the middle of the Río Dantas in Parque Nacional Barbilla, Costa Rica. © Bárbara I. Escobar-Anleu

Fig. 2. A young Green Basilisk (*Basiliscus plumifrons*) found sleeping on the groove of a boulder along the Río Dantas in Parque Nacional Barbilla, Costa Rica. © Bárbara I. Escobar-Anleu

Vitt et al. (1995) reported that individuals of *N. oxylophus* were observed using a variety of microhabitats along streams in southeastern Nicaragua, including logs, the stems of grasses, leaves above the ground, leaf litter on the ground, vines, and open ground. Lizards often were found at night perched on leaves or vines, usually above or near the water. Four of 32 (12.5%) anoles were found sleeping on the cliff face of a waterfall (Vitt et al., 1995), but these authors did not specify the sleeping substrate for these four individuals. *Norops oxylophus* also can be found on moss-covered tree trunks during the day (Guyer and Donnelly, 2005). *Norops aquaticus*, an ecologically similar species, also has been observed perching and feeding on rocks, logs, and low vegetation during the day (Savage, 2002). Differences between diurnal and nocturnal perches may result from different selective pressures during day and night (Singhal et al., 2007).

Anole sleeping perches have been described in differing detail for several species in several countries. Branches and the leaves of ferns, herbs, grasses, bushes, shrubs, and trees, have been reported as sleeping perches for these lizards: 23 juveniles and seven adults of *N. uniformis* (as *A. uniformis*) were found sleeping on leaves of 14 species of plants (Cabrera-Guzmán and Reynoso, 2010). Preferences by certain species for particular types of sleeping sites, such as structurally unstable perches, high perches, or warm perches, also have been reported (Mohanty et al., 2016). Sleeping perch selection could have thermoregulatory implications (Christian et al., 1984), or influence the timing of display behaviors to conspecifics in the morning (Andrews, 1971).

The most frequent perch types used by *Basiliscus galeritus* in Colombia were branches (46.15%) and leaves (38.46%), although some individuals were observed on vines, stems, and on the ground (Hernández-Córdoba et al., 2012). Small juveniles are more capable of using their ability to run on water (Glasheen and McMahon, 1996), and thus they can use low perches to escape. Larger individuals, however, use higher perches so they can find other escape routes (Hernández-Córdoba et al., 2012). Several other lizard species in tropical areas have been reported to sleep on vegetation (Pianka and Vitt, 2003). On the Andaman Islands of India, near the Myanmar coast, most individuals of two species of the genus *Coryphophylax* have been reported to sleep on leaves (Mohanty et al., 2016). The use of rocks as sleeping perches by tropical lizards, therefore, apparently is an uncommon behavior.

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***Bothrops asper* (Garman, 1883). Diet.** The Fer-de-Lance, *Bothrops asper*, is an abundant and widespread pitviper with a distribution that on the Atlantic versant extends from northeastern Mexico to northern South America, and on the Pacific versant in southern Mexico and Guatemala and from northwestern Costa Rica to northern Peru (Campbell and Lamar (2004). This species is found in a variety of habitats and shows great plasticity in its diet. The most important prey are anurans, birds, and rodents, but centipedes, lizards, snakes, and fishes also form an infrequent but important part of the diet, especially for juveniles (Sasa et al., 2009). More recent records of prey include a fish (*Synbranchus marmoratus*), an anuran carcass, reptiles (*Amphisbaena alba*, *Lepidophyma flavimaculatum*, *Lepidophyma tuxtlae,* and *Sceloporus chrysostictus*), birds (*Eucometis penicillata* and *Troglodytes* sp.), and mammals (*Cryptotis* sp. and *Ototylomys phyllotis*) (Hertz et al., 2009; Logan and Montero, 2009; Urbina-Cardona, 2009; Moody, 2015; Platt et al. 2016).

Holcosus festivus (formerly *Ameiva festiva*; Harvey et al, 2012) occurs on the Atlantic versant from Tabasco, Mexico, to northern Colombia, and on the Pacific versant from northwestern Costa Rica to western Colombia (Savage, 2002). Although this teiid is strictly diurnal and essentially a forest species, its activity is mainly manifested in the midmorning on clear days (Savage 2002). Naturals predators include *Bothriechis schlegelii*, *Bothrops asper*, *Oxybelis fulgidus*, *Oxyrhopus petola*, *Porthidium nasutum*, and *Phrynonax poecilonotus* (Van Verkum, 1986; Greene, 1997; Sasa et al., 2009; Sorrel1, 2009; Pineda Lizano, 2010).

Herein we report a predation event of an adult *B. asper* preying on an adult *H. festivus* (Fig. 1). On 2 November 2007 at 1123 h, ASM observed and photographed this occurrence at Río Botija, Donoso, Provincia de Colón, Panama (8.823885°N, 80.697609°W; WGS 84; elev. 167 m). Although this note represents the second report of *H. festivus* in the diet of *B. asper* (cited as "unpublished" in Sasa et al., 2009), to our knowledge this is the first photographic record of such an event.

Fig. 1. An adult *Bothrops asper* feeding on an adult *Holcosus festivus* at Río Botija, Donoso, Provincia de Colón, Panama.

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***Corallus annulatus* (Cope, 1825). Diet.** The distribution of the Annulated Treeboa, *Corallus annulatus*, extends disjunctly on the Atlantic versant from southeastern Guatemala and northwestern and northeastern Honduras, and then from eastern Nicaragua to Colombia (including the Río Magdalena drainage), and on the Pacific versant from central Panama to northwestern Colombia (Henderson, 2015). In Costa Rica, this species is found in Lowland Moist and Wet forests on the Caribbean versant, at elevations from sea level to 1,000 m (Henderson et al., 2001; Savage, 2002; Solórzano, 2004; Sasa et al., 2010). The diet of this species is known to consist of a variety of small mammals, including rodents, bats, and squirrels, as well as lizards and birds (Solórzano, 2004; Henderson, 2015).

On 19 December 2016, at Guayacán de Siquirres, Provincia de Limón, Costa Rica (10.03720°N, -83.52280°W; WGS 84; elev. 710 m), we found an adult female *C. annulatus* (total length 1.43 m) that contained an extraordinarily large prey item in its stomach (Fig. 1). After allowing the snake to digest its prey, a fecal analysis revealed the remains of the hair and bones of an Armored Rat (*Hoplomys gymnurus*; Echimydae; Fig. 2). This nocturnal, large rat is relatively abundant in rainforest along both versants of Costa Rica (Wainwright, 2007). To our knowledge, this represents the first report of *H. gymnurus* in the diet of *C. annulatus*.

Fig. 1. An Annulated Treeboa (*Corallus annulatus*) found with an extraordinarily large pre item in its stomach at at Guayacán de Siquirres, Provincia de Limón, Costa Rica. © Quetzal Dwyer

Fig. 2. A fecal analysis of the material passed by the *Corallus annulatus* revealed the remains of an Armored Rat (*Hoplomys gymnurus*). © Alejandro Solórzano

Acknowledgments.—We thank Melissa E. Rodríguez Girón, an assistant at the collection of mammals at the Museo de Zoología at the Universidad de Costa Rica, for identifying the rodent, and Gerardo Chaves and Federico Bolaños of the herpetology section of the museum for logistic support. This work was conducted under an operational permit granted to Parque Reptilandia under Resolución ACLA-P-D 456-2014.

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***Crotalus ravus*. Diet and accidental mortality involving a *Sceloporus spinosus*.** The Mexican Pygmy Rattlesnake, *Crotalus ravus*, is a small Mexican endemic species distributed at moderate to high elevations in the states of Veracruz, Puebla, Tlaxcala, Hidalgo, Querétaro, México, Morelos, Guerrero, and Oaxaca, and in the Distrito Federal; it inhabits pine-oak forest, cloud forest, boreal forest, high tropical scrub, and upper tropical deciduous forest, but most often is found in open areas or regions covered by low vegetation (Uribe-Peña et al., 1999; Campbell and Lamar, 2004; Fernández Badillo et al., 2011). The diet of this rattlesnake is known to consist of insects, lizards, snakes, and small mammals (Klauber, 1972; Campbell and Armstrong, 1979; Sánchez-Herrera, 1980; Mendoza-Hernández et al., 2004; Mendoza-Quijano et al., 2008; Calzada-Arciniega et al., 2016; Díaz de la Vega-Pérez et al., 2016;); recently, Bucio-Jiménez and Pérez-Mendoza (2016) also reported a predatory attempt by this species on a bird. Here, we report a predation event by *C. ravus* that apparently led to the individual's death.

On 30 March 2017 at 1730 h, we found a *C. ravus* at Parque Nacional La Malinche (PNLM), in Tlaxcala, Mexico (19°14'41.635"N; 97°55'36.299"W; WGS 84; elev. 2,670 m). The snake measured 516 mm in snout–vent length (SVL) and 574 mm in total length (TL), and its body mass was 100.6 g. The snake was captured in a cornfield, and housed in a sterile environment at Estación Ciéntifica La Malinche. A few hours later, however, the snake was found dead. We conducted an autopsy, which revealed an obstruction the stomach region (at ca. ⅔ of the body length) and torn tissue evident around the immediate area, apparently caused by the prey the snake had ingested

(Fig. 1). The prey item was an adult male *Sceloporus spinosus* (SVL = 83 mm, TL = 222 mm, body mass = 29.8 g); the body mass of the lizard was equivalent to about of 30% of the body mass of the predator. The results of the autopsy revealed the cause of death as the large size of the prey item ingested, particularly because of the heavily keeled scales of the lizard. The anterior half of the lizard's body had been partially digested in the stomach, and the posterior half was in the area of the esophageal opening; we also observed localized tissue injuries in the stomach mucous. Nonetheless, we cannot discount the possibility that manipulating the snake during the digestive process might have been a contributing factor to its death.

Crotalus ravus is known to prey on several species of lizards, and in this area *S. grammicus* and *S. aneus* occur at similar elevations. Nonetheless, although our observation represents an example of opportunistic feeding behavior by *C. ravus*, the death of the snake apparently occurred because of the large size and external characteristics of an adult *S. spinosus*. Nonetheless, we believe that *S. spinosus* constitutes part of the natural diet of *C. ravus*.

Fig. 1. The results of an autopsy conducted on a *Crotalus ravus* found at Parque Nacional La Malinche, Tlaxcala, Mexico, revealed a large adult *Sceloporus spinosus* in the stomach contents. © Rodrigo Barrios-Montiel

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***Enulius flavitorques* (Cope, 1869). Feeding behavior.** The Thick-tailed Snake, *Enulius flavitorques*, is a wide-ranging species distributed on the Pacific versant from Jalisco, Mexico, to Panama, and on the Atlantic versant in Chiapas, Mexico; Honduras, and from central Panama to Colombia and thence to northwestern Venezuela (Köhler, 2008; McCranie, 2011). In Costa Rica, this nocturnal, terrestrial and semifosorial snake occurs primarily in Tropical Dry Forest in the northwestern part of the country, as well as in Tropical and Subtropical Rainforest on the Meseta Central, at elevations from sea level to 1,300 m (Savage, 2002, Solórzano, 2004; Sasa et al., 2010). Recently, however, the presence of this species was verified in southwestern Costa Rica (Abarca and Bolaños, *This issue*).

Scott (1983) indicated that *E. flavitorques* specializes in feeding on small reptile eggs, and McCranie et al. (2005) reported on an individual from Isla de Utila on the Bay Islands of Honduras that was found 35 cm deep in sand next to a clutch of *Cnemidophorus lemniscatus* eggs, which it might have been intending to eat (Gutche, 2003; McCranie, 2011). Further, Solórzano (2004) noted that the enlarged rear teeth of *E. flavitorques* are used to perforate the shell of small reptile eggs.

On 23 March 2017 between 1900 and 2000 h, one of us (BM) found four adult *E. flavitorques* inside an open enclosure used to house and reproduce Green Iguanas (*Iguana iguana*) in captivity (Fig. 1), at Barrio Las Mesas, Brasil de Santa Ana, Provincia de San José, Costa Rica (9°56.331'N, 84°13.831'W; WGS 84). For several years,

individuals of *E. flavitorques* had been found in the iguana enclosures from February to May, but especially in March, which corresponds to the time of year when the iguanas deposit their eggs and bury them in the soil of the enclosures. During these events, the snakes often were observed piercing and entering the shells of the eggs to feed on their contents. On this particular occasion, soon after the snakes were found one of the eggs was removed from the enclosure, and all of the snakes and the egg were placed in a plastic container with soil from the enclosure in an effort to document the snakes' feeding behavior. Subsequently, one of the snakes began piercing the shell of the egg by using its enlarged rear teeth (Fig. 2), after which two other snakes began showing the same behavior, as each attempted to push their head into the egg (Fig.3) and eventually two of the snakes succeeded (Fig. 4). The snakes then ingested the contents of the egg.

These observations apparently indicate that the *E. flavitorques* were attracted to the eggs through their olfactory senses, and gathered in groups at night to prey on the eggs. Our observation confirms that these small snakes are able to consume reptile eggs of considerable size, and thus we suggest the possibility that this species might consume the eggs of marine and terrestrial turtles, as well as those those of lizards and snakes.

Fig. 1. Enclosures at Barrio Las Mesas, Brasil de Santa Ana, Provincia de San José, Costa Rica, used to house and reproduce Green Iguanas (*Iguana iguana*) in captivity.
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Fig. 2. An *Enulius flavitorques* using its enlarged rear teeth to pierce the shell of a Green Iguana (*Iguana iguana*) egg.
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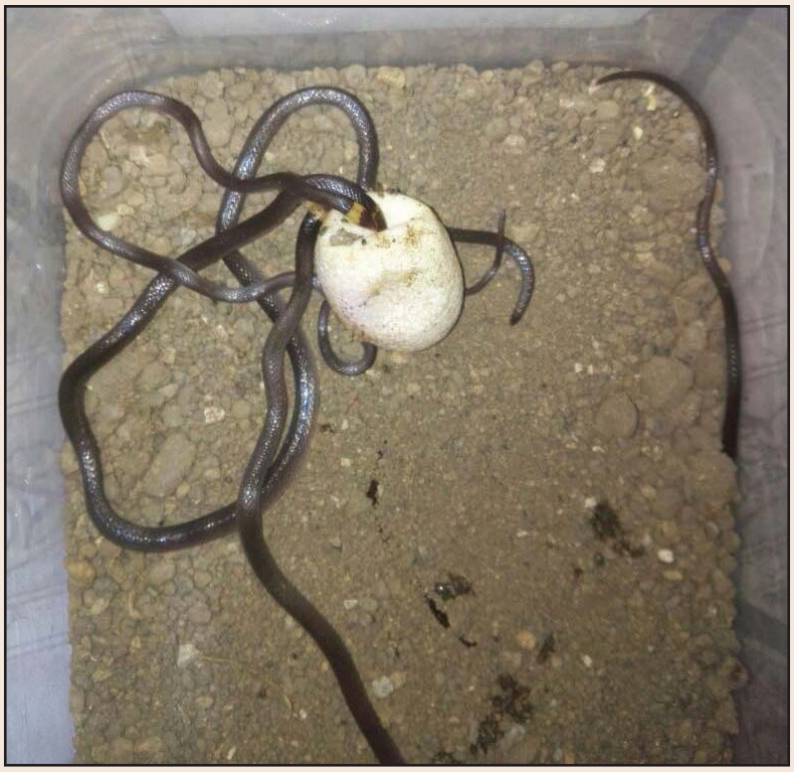

Fig. 3. Once the shell of the egg was pierced, the *Enulius flavitorques* began trying to push their heads into the eggs.
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Fig. 4. Eventually, two of the *Enulius flavitorques* succeed in pushing through the shell, and entered the egg and ingested the contents.
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***Hydrophis platura*. Predation by a Common Black-Hawk (*Buteogallus anthracinus*).** The Yellow-bellied Seasnake, *Hydrophis platura*, is a common species with the broadest distribution of any snake; in the eastern Pacific Ocean, it occurs from extreme southwestern California, United States, southward to northern Peru and the warm waters surrounding Isla de Pascua, Chile (Campbell and Lamar, 2004; Wallach et al., 2014). This species is a pelagic sea dweller, with its life cycle occurring in the water, where individuals often are seen floating at the surface 1–20 m from the shore (Kropach, 1975; Voris, 1983; Campbell and Lamar, 2004). In Costa Rica this species often is encountered in gulfs and bays, and at the beginning of the dry season individuals sometimes are encountered stranded along the shore after a combination of strong seasonal winds and ocean currents (Solórzano, 2004; Solórzano and Kastiel, 2015).

Relatively few predation events on this marine species are known (Heatwole, 1999; Solórzano 2004), perhaps owing to its aposematic coloration and putative toxic skin that, as reported by Kropach (1975), discourage predatory fishes and sharks. Sheehy et al. (2011) found scars on the bodies of swimming *H. platura*, possibly caused by unsuccessful predation attacks by birds that capture and rapidly release the snakes in the water. Because of the shape of the injuries sustained, these authors considered such predatory attempts by birds the most likely explanation for the scars, and suggested that such incidents might be relatively common in the area. Predatory attacks also occur when

the snakes are stranded on the beach, a situation that makes them more vulnerable (Solórzano and Kastiel, 2015). Here, we report another predatory event that occurred under these circumstances.

On 17 August 2015 at 1115 h, a photographer observed a Common Black-Hawk (*Buteogallus anthracinus*) capturing an adult *H. platura* on a beach at Playa Minas, Distrito Cabo Velas de Santa Cruz, Provincia de Guanacaste, Costa Rica (10 39.725'N, 85 82.961'W; WGS 84). The hawk approached the snake and suddenly grabbed it with its talons, applying pressure, then flew to the branch of a nearby tree and began to eat it. The time from when the bird landed on the beach, captured the snake, and flew off to the tree lasted about 2 min. At that point the snake no longer appeared to be moving, and the bird started to eat it.

Fig. 1. (A) A Common Black-Hawk (*Buteogallus anthracinus*) approaches an adult *Hydrophis platura* on a beach at Playa Minas, Distrito Cabo Velas de Santa Cruz, Provincia de Guanacaste, Costa Rica; (B) the hawk grabs the snake by the head with its talons and applies pressure; and (C) the bird flies away with the snake. © Juanqa Fonseca

Acknowledgments.—We thank Juanqa Fonseca for allowing us to use the photographs and providing information about the event.

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***Leptophis diplotropis* (Günther, 1872). Diet.** The Pacific Coast Parrot Snake, *Leptophis diplotropis*, is a Mexican endemic colubrid with a distribution extending from Sonora and southwestern Chihuahua southward along the Pacific coast to Oaxaca, and into several states in central Mexico, including Morelos, Puebla, and Hidalgo (Rorabaugh and Lemos-Espinal, 2016; Lemos-Espinal and Dixon, 2016). This species inhabits tropical dry forest, semi-deciduous forest, mangrove forest, oak forest, and wet forest, and also is found in disturbed areas (García and Ceballos, 1994; Ponce-Campos and García, 2007; Berriozabal-Islas et al., 2012). *Leptophis diplotropis* is a diurnal treesnake, but also can be found on the surface. Its diet is known to include mainly frogs (*Agalychnis dacnicolor*, *Lithobates pipiens*, *Tlalocohyla smithii*, *Smilisca baudinii*, and *Smillisca fodiens*) and lizards (*Phyllodactylus tuberculosus*) (Oliver, 1948; Hardy and McDiarmid, 1969; Hernández-Ríos and Cruzado-Cortéz, 2011; Calderón-Patrón et al., 2014; González-Solórzano and Escobedo-Galván, 2015).

On July 1, 2009 at 0730 h, at the Estación de Biología Chamela IB UNAM, Chamela, Municipio de La Huerta, Jalisco, Mexico (19°29'56.472"N, 105°02' 44.32"W; datum WGS 84; elev. 74 m), we observed an adult *L. diplotropis* consuming an individual of *Trachycephalus typhonius* (Hylidae) on a tree in tropical dry forest (Fig. 1). The *L. diplotropis* had captured the *T. typhonius* by biting one of its hind legs, at an estimated height of 1.7 m from the ground. The snake then pierced the frog's belly by using its opisthoglyphous rear fangs, which left the frog

severely wounded, with its entrails exposed. The frog then emitted a loud distress call, and freed itself by covering the snake's snout with a noxious, sticky, milky-white secretion that is characteristic of this species (Leenders, 2016). Soon after the frog fell from the tree and attempted to escape, but the snake re-captured it, and proceeded to swallow it. To our knowledge, this observation represents the first record of *L. diplotropis* feeding on *T. typhonius*.

Fig 1. A *Leptophis diplotropis* capturing an adult *Trachycephalus typhonius* in tropical dry forest at Estación de Biología Chamela IB UNAM, Chamela, Municipio de la Huerta, Jalisco, Mexico.

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***Micrurus nigrocinctus.* (Girard, 1854). Tail color pattern.** The Central American Coralsnake, *Micrurus nigrocinctus*, is distributed on the Pacific versant of southeastern Oaxaca and Chiapas, Mexico, and southeastward through Central America, excluding the highlands, to northwestern Colombia (Campbell and Lamar 2004). This species occurs in Lowland Moist, Dry, and Wet forests, Premontane Moist and Dry forests, and peripherally in Lower Montane, and Wet Forest formations, at elevations from near sea level to 1,640 m (McCranie, 2011). The diet consists primarily of snakes and lizards, but this species also is known to consume swamp eels (*Synbranchus* sp.), caecilians, and lizard eggs (Campbell and Lamar (2004).

This species is easily identified because of its color pattern, which generally is tricolored and consists of black, yellow, and red rings. The snout is entirely black, and the body contains 10–24 black body rings and 3–8 black rings on the tail. The pale tail rings often are yellow, but may be red in some specimens (Campbell and Lamar, 2004).

Herein we describe an individual of *M. nigrocinctus* with an abnormal color pattern on the tail. On 3 March 2017 at 1900 h, at Reserva Natural Privada Finca El Patrocinio, Quezaltenango, Guatemala at an elevation of 750 m, one of us (JP) saw a *M. nigrocinctus* crawling near the campground. The tail of the individual was ringed with black and yellow, but red markings were present in both the dorsal and ventral portions of the yellow rings. The snake was photographed (Fig. 1A, B), then moved away from the campground and released in the adjacent forest.

Fig. 1. An adult *Micrurus nigrocinctus* from Reserva Natural Privada Finca El Patrocinio, Quetzaltenango, Guatemala. Note the unusual color pattern on the tail, specifically the red markings within the yellow rings. © Juan Gudiel

Acknowledgments.—We thank the Departamento de Biología of the Universidad del Valle de Guatemala for logistic support for our field trip, the staff of Finca Patrocinio Natural Reserve for allowing us work there, and Daniel Ariano for verifying the identification of the snake and reviewing this note, as well as for all we have learned from him during the early stages of our careers in herpetology. We also are grateful to Melissa Villatoro providing an earlier photograph of the snake, and Diego Gudiel for color correcting and improving the photo used here. Finally, we thank Louis Porras for commenting on and improving an earlier version of this note.

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***Oxybelis fulgidus* (Daudin, 1803). Predation on an Ivory-billed Woodcreeper (*Xiphorhynchus flavigaster*).** The Green Vinesnake, *Oxybelis fulgidus*, has a broad distribution that extends from Mexico southward through Central America and South America to Argentina (Campbell, 1998). This species usually inhabits rainforest or gallery forest, and because of its leafy coloration often is hard to detect (Lamar, 1997; Lee, 2000; Köhler, 2008). *Oxybelis fulgidus* is adept at capturing birds; individuals sometimes will position themselves next to a flower and remain motionless while waiting for a hummingbird to appraoach (Lamar, 1997). This species is equipped two enlared rear maxillary teeth that are used to envenomate their prey (Heyborne and Mackessy, 2013), which then is swallowed rapidly. Once the prey is ingested, an individual will search for a place to rest, usually on the highest point of a tree. The venom, a taxon specific neurotoxin called fulgimotoxin, apparently is toxic to the snake's native prey, but is non-toxic or only mildly toxic to humans (Mackessy, 2010; Heyborne and Mackessy, 2013).

On 26 April 2017, at Chemuyil (5 km S of Akumal), Municipio de Tulum, Quintana Roo (10.35°N, 87.35°W; WGS 84), MRL observed an adult *O. fulgidus* in a Dzizilche Tree (*Gymnopodium floribundum*) consuming an Ivory-billed Woodcreeper (*Xiphorhynchus flavigaster*). The *O. fulgidus* had captured the bird by biting its head, and after the bird appeared to be immobilized by the venom, proceeded to swallow it while in a vertical position, which lasted about 22 min. *Xiphorhynchus flavigaster* perhaps is an assiduous type of prey for arboreal snakes, as it remains distracted on the tree trunk while feeding on insects. This observation represents the first record in this region of *O. fulgidus* feeding on *X. flavigaster* (Scartozzoni et al., 2009; Figueroa and Valerio, 2011).

Fig. 1. An *Oxybelis fulgidus* capturing a *Xiphorhynchus flavigaster* in a *Gymnopodium floribundum* tree in medium semi-deciduous forest at Chemuyil, Municipio de Tulum, Quintana Roo, Mexico. © Martín Rodríguez-Lima

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***Trimetopon slevini* Dunn, 1940. Predation on a velvet worm**. Predator-prey interactions involving Neotropical semifossorial snakes under field situations seldom are recorded, and can provide some of the few records of dietary items known for the species (Solórzano and Greene, 2012; Acosta Chaves and Villalobos Chaves, 2015; Ramírez-Fernández, 2016). Here we present a rare observation of predation by the seldom-seen *Trimetopon slevini* Dunn, 1940 (Dipsididae) on an onychophoran, commonly referred to as a velvet worm. To the best of our knowledge, this observation represents the first record of an onychophoran in the diet of this snake.

On 20 January 2015 at ca. 1900 h, an adult *T. slevini* was observed burrowing its head into a mossy embankment along a wilderness trail (outside of Parque Nacional Chirripó) in the town San Gerardo de Rivas, Cantón de Pérez Zeledón, Provincia de San José, Costa Rica (9°28'10.88"N, 83°35'3.51"W; map datum WGS 84; elev. 1,510 m). The snake appeared to be preying on a food item, and after about 20 sec it emerged holding a live velvet worm in its mouth (Fig. 1A). The snake's head had vegetation and other debris stuck to it, perhaps because the velvet worm had secreted a glue-like substance from its slime glands, which onycophorans use for defense (Fig. 1B). The snake had grabbed its prey on the posterior part of the body and appeared to be consuming it, while the invertebrate had stretched its body in an apparent effort to avoid predation, and was trying to work against the snake by twisting away from the mouth and attempting to use its rows of stubby feet as leverage (Fig. 1C); the snake, however, seemed undeterred by these efforts. We are unaware of how long it took the snake to capture and extract the velvet worm from its hiding place, but once the prey item was about one-half consumed it took less than 2 min to fully ingest it; the head and antennae were consumed last (Fig. 1D).

Fig. 1. A *Trimetopon slevini* preying on an unidentified species of velvet worm. (A) The snake extracted the onychophoran from the substrate; (B) the velvet worm apparently secreted a glue-like substance from its slime glands to deter the predator; (C) the snake grabbed the velvet worm on the posterior part of the body as the velvet worm tried to escape; and (D) the snake consumes the velvet worm. © Matt Smokoska

Records of predation on velvet worms are scarce, but birds (e.g. *Turdus grayi*), coralsnakes (e.g., *Micrurus hemprichii*), spiders (e.g., *Ctenus* sp.), centipedes, and fishes are known to prey on them (Wright, 2014; Franco and Monge-Nájera, 2016). Because *Trimetopon* is a genus of harmless snakes with aglyphous dentition (Solórzano, 2004), the invertebrate was not killed by venom, as was the case for predation events carried out by the spider or coralsnake (Franco and Monge-Nájera, 2016). We were unable to determine the genus and species of our velvet worm from our observation, as it did not agree with the species profile or localities reported for the described and potentially new onychophorans from Costa Rica, and perhaps it could represent a new species (Barquero-González et al., 2016a; Barquero-González et al., 2016b). On January 2015, four velvet worms were found in the same area, and because of their similar external characteristics we presume they are the same taxon as the one in this report; none of these individuals agreed with the morphological species profile reported by Barquero-González et al. (2016a, b) (Fig. 2). The taxonomy of these invertebrates is extremely complex, and in Costa Rica efforts to understand the diversity of this group are still in the early stages (Barquero-González et al., 2016a).

According to Solórzano (2004) natural history information on *T. slevini* is practically unknown. Although this species is known to occur at elevations from 450 to 1,825 m in Costa Rica and southwestern Panama (G. Chaves, pers. comm.; Savage, 2002; Solórzano, 2004; McConnell 2014), only a few localities have been reported and our

observation represents a range extension for the Pacific versant of Costa Rica. Again, as suggested by Acosta-Chaves and Villalobos-Chaves (2015), only research and the publication of field observations of predator-prey interactions between semifossorial snakes and invertebrates can improve our understanding in this field. Finally, because onychophorans often are accidentally detected in tropical forests (Barquero-González et al., 2016a), we believe that our observation provides unique information on the natural history of both groups, and even suggests that the rare *T. slevini* might have an evolutionary relationship with this type of uncommon prey.

Fig. 2. An individual of what appears to be an undescribed species of velvet worm that an individual of *Trimetopon slevini* consumed at San Gerardo de Rivas, Cantón de Pérez Zeledón, Provincia de San José, Costa Rica. © Matt Smokoska

Acknowledgments.—We are grateful with José Pablo Barquero for his revision of the velvet worm species, as well as for providing other valuable comments.

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***Tropidodipsas annulifera* Boulenger, 1984. Parasite.** The Western Snail-eating Snake, *Tropidodipsas annulifera* Boulenger, 1894, occurs in western Mexico from Sinaloa to central Guerrero; this species primarily is nocturnal, and its activity is associated with heavy summer rains (Heimes, 2016). We are not aware of reports on parasites in *T. annulifera*, and herein we establish an initial parasite list for this species.

One male *T. annulifera* (SVL = 413 mm) collected on 8 July 1962 from 17 km N of Mazatlan (23.232778°N, 106.406111°W; WGS 84) was deposited in the herpetology collection of the Natural History Museum of Los Angeles County (LACM), Los Angeles, California, United States (as LACM 103760). We opened the posterior third of the body cavity of this specimen and searched for parasites, and found one macroparasite encysted in the inner body wall. We placed the macroparasite on a microscope slide and added a drop of lactophenol and a cover slip, and examined it under a compound microscope. Based on Anderson et al. (2009) and the original description (Ubelaker and Younus, 1965), we identified it as an immature female *Cruzia tropidodipsi*, which is easily differentiated from other species of in this genus by the presence of secondary swelling in the esophagus (Ubelaker and Younus, 1965). The life cycle of *C. tropidodipsi* is unknown. We deposited the *C. tropidodipsi* in the Harold L. Manter Parasitology Laboratory (HWML), University of Nebraska, Lincoln, Nebraska, United States (as HWML 99814). Ubelaker and Younus (1965) described *Cruzia tropidodipsi* from a specimen of *Tropidodipsas fasciata* from Oaxaca, Mexico. *Cruzia tropidodipsi* in *T. annulifera* is a new host record, and the second reported species to harbor *C. tropidodipsi*.

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Amphibia: Anura

Family Hylidae

***Sarcohyla bistincta* (Cope, 1877).** MEXICO: VERACRUZ: Municipio de Los Reyes, Ocotepec, Finca Santa Martha (18°40'32.44"N, 97°1'30.39"W; elev. 1,620 m); 29 October 2016; Víctor Vásquez-Cruz. At 1630 h, an adult female was found in vegetation along the edge of a trail in a patch of cloud forest. The morphological characteristics of the individual correspond to those described by Duellman (2001). We deposited a photo voucher in the University of Texas at Arlington Digital Collection (UTADC-8853). Additionally, several more individuals were observed at the same site in June of 2017, at the start of the rainy season (M. De la Torre-Loranca, pers. observ.). The voucher represents a new municipality record. The previous reported localities for this species in the state are as follows: 4 km south of the Puerto del Aire Acultzingo, MVZ (1 specimen); Xometla, La Perla, LACM (1); no specific locality, USNM (1): Cumbres de Acultzingo, FMHNH (2), UIMNH (5), USNM (1) (Duellman, 2001). This report represents a range extension of 34.5 km to the E of the closest previously reported locality at Cumbres de Acultzingo, Acultzingo, Veracruz (18°42'18.40"N, 97°20'24.90"W; elev. 2,363 m) (Duellman, 2001).

Fig. 1. A female *Sarcohyla bistincta* (UTADC-8853) from Finca Santa Martha, Ocotepec, Municipio de Los Reyes,Veracruz, Mexico. © Víctor Vásquez-Cruz

Acknowledgments.—We thank Carl J. Franklin for cataloguing the digital photograph.

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Family Craugastoridae

***Craugastor yucatanensis* (Lynch, 1965).** MEXICO: QUINTANA ROO: Municipio de Solidaridad, Centro Recreativo Río Secreto (20°35'19.87"N; 87°08'05.67"W); elev. 8 m; 15 August 2015; Cecilia Cahum-Cahum. An adult frog (UTEP G-2017.21; Fig.1) was found a few meters from the entrance of a cave system called Pool Tunich or Cavernas del Río Secreto. This locality represents the easternmost record of this species (see distribution map in Lee, 1996), and extends the range ca. 51 km to the SE and 63 km to the NE, respectively, from the closest known localities reported by Lee (1996): 1.5 km S, 7 km E Pueblo Nuevo X-Can, and Cobá.

Fig. 1. An adult *Craugastor yucatanensis* (UTEP G-2017.21) observed a few meters form the entrance of Cavernas de Río Secreto, Municipio de Solidaridad, Quintana Roo, Mexico. © Cecilia Cahum-Cahum

Acknowledgments.—We thank Arthur Harris of the University of Texas at El Paso Biodiversity Digital Collection for kindly providing the photo voucher number.

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Family Rhinophrynidae

***Rhinophrynus dorsalis* Duméril and Bibron, 1841**. MEXICO: TAMAULIPAS: Municipio de Abasolo, Rancho El Contadero (24°01'51.7"N 98°18'39.2"W; WGS 84); elev. 30 m; 4 November 2015; Elida Xanett Aguilar-Izaguirre. A photograph of this individual is deposited in the University of Texas at El Paso Biodiversity Digital Collection (Photo voucher UTEP G-2017.12). This voucher (Fig. 1) represents a new municipality record and the fourth known locality for this species in the state, and narrows the gap between the nearest localities at ca. 90 km to the N in San Fernando, and 99 km to the S in Hacienda La Clementina, Llera (see Martin, 1958). This individual was found at 1746 h under soil and among the roots of a Honey Mesquite Tree (*Prosopis glandulosa*) in an ecotone between Tamaulipan thorn scrub (matorral espinoso tamaulipeco) and oak forest, within the drainage of Río Soto La Marina.

Fig. 1. A *Rhinophrynus dorsalis* (UTEP G-2017.12) from Rancho El Contadero, Munici-pio de Abasolo, Tamaulipas, Mexico. © Elida Xanett Aguilar-Izaguirre

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Amphibia: Caudata

Family Plethodontidae

***Pseudoeurycea conanti* Bogert, 1967**. MEXICO: OAXACA: Municipio de Santa Catarina Juquila, 5.6 km E of Santa Catarina Juquila (16°14'38.15"N, -97°14'28.92"W; WGS 84), elev. 1,995 m; 19 June 2016; Larry David Wilson, Vicente Mata-Silva, Elí García-Padilla, Dominic L. DeSantis. The specimen (CIB 5090) is deposited in the herpetological collection of the Centro de Investigaciones Biológicas of the Universidad Autónoma del Estado de Hidalgo. This individual (Fig. 1) represents a new municipality record, and narrows the gap between the closest localities at ca. 76 km to the NW from Cerro de Las Chinches, Santa Cruz Itundujia, Municipio de Zaragoza (Riaño-García, et al., 2017), and ca. 34 km to the NNE at La Cumbre, Municipio de Villa de Sola de Vega (Parra-Olea et al., 1999; Mata-Silva et al., 2015). This new locality represents the southernmost known distribution for *P. conanti*. The salamander was found in pine-oak forest, under a log at 1300 h.

Fig. 1. An individual of *Pseudo-eurycea conanti* (CIB 5090) from 5.6 km E of Santa Catarina Juquila, Municipio Santa Catarina Juquila, Oaxaca, Mexico.

© Vicente Mata-Silva

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New distribution records for two uncommon amphibian species on the Caribbean slopes of the Cordillera de Talamanca, Costa Rica

Based on surface area, the highest diversity density of amphibians in the world is in Costa Rica, with ~4 species/1,000 km^2 (AmphibiaWeb, 2017). Nevertheless, amphibian diversity is not spaced homogenously across the country, as the highest density occurs along the Caribbean slopes (Savage, 2002; Kubicki, 2008, 2016; Kubicki and Arias, 2016; AmphibiaWeb, 2017). Conducting biological studies along most areas of the Caribbean slopes, however, is a difficult undertaking on account of the steep and complex topography, erratic weather conditions, and the overall lack of access throughout most of this region. Accordingly, because of these difficulties many sites along the Caribbean slopes have remained unexplored, and several species with distributions apparently restricted to this area of Costa Rica are known only from a few specimens (i.e., *Bolitoglossa schyzodactyla*, *Diasporus tigrillo*, *Duellmanohyla lythrodes*, and *Oedipina nimaso*, among others) (Savage, 2002; Boza-Oviedo et al., 2012). Additionally, other species likely inhabit this region, but officially have not been recorded there; two examples are the frog *Pristimantis* (*Syrrhopus*) *pardalis* (Barbour, 1928) and the salamander *Bolitoglossa minutula* Wake, Brame, and Duellman, 1973 (Savage, 2002; AmphibiaWeb, 2017).

Pristimantis pardalis has been regarded as an uncommon species that is difficult to observe in nature, and is known to inhabit the Pacific slopes of southwestern Costa Rica and the Atlantic slopes of northwestern to eastern Panama. The known elevational range of this anuran is from 50 to 1,450 m (Savage, 2002). According to the IUCN Red List, this species has been assessed as Near Threatened (Solís et al., 2010). In Costa Rica, *P. pardalis* only has been recorded from a limited number of localities on the Pacific versant, more specifically the Fila Costeña and the Cordillera de Talamanca (Fig. 1) (Savage, 2002; Barrio-Amorós and Barrio-Amorós, *This Issue*). Despite the fact that *P. pardalis* only has been documented on the Pacific versant of Costa Rica, Solís et al. (2010) suggested that this species might inhabit the Caribbean slopes of the Cordillera de Talamanca, which likely is the reason why Leenders (2016) included this area in his distribution map. A similar situation exists with the salamander *B. minutula*, which also is an uncommon species believed to inhabit both slopes of the Cordillera de Talamanca in Costa Rica and western Panama, but only has been documented on the Pacific slope of the Cordillera de Talamanca in Costa Rica (Fig. 1). The known elevational range of *B. minutula* is from 1,670 to 2,100 m (Savage, 2002). According to the IUCN Red List, *B. minutula* has been evaluated as Endangered (Solís et al., 2008).

In October of 2016, accompanied by Omar Zúñiga, Justino Layam Gabb, and Xavier Baltodano, we conducted an extensive herpetological survey along the Caribbean slopes of the southeastern Cordillera de Talamanca, Costa Rica. While searching for amphibians in a section of old-growth cloud forest at elevations from 1,500 to 1,650 m (9.374°N, 83.040°W), we made three interesting discoveries. The first occurred on 27 October at 1000 h, when we found an adult female *P. pardalis* while searching through moss growing on a tree trunk, approximately 1 m above the ground (Fig. 2A). On 28 October at 0900 h, we discovered a second individual of *P. pardalis* (Fig. 2B) as it hopped in the leaf litter. The third discovery occurred on 28 October at 0700 h, when we came across an adult male *B. minutula* within a mat of moss growing approximately 1 m above the ground on the trunk of a tree (Fig. 3).

The characters shown by adult female *P. pardalis* (EAP0804, UCR22885, SVL: 25.1 mm) agree with those in the original description of the species (Barbour, 1928), as well as with the descriptive information provided by Savage (2002). The dorsum of this female was uniform dark brown, similar to the individual shown in Savage (2002: plate 123), but differs from the individuals depicted in Leenders (2016) in that their coloration mostly is blackish-gray; these coloration or tonal differences might be due to the flash of the camera, or to varying degrees of metachrosis exhibited among the various individuals. The dorsum of the juvenile specimen (EAP0815, UCR22887, SL: 10.7 mm) is rugose, and in life the frog displayed greenish-white mottling; this pattern is similar to the juvenile shown in Leenders (2016), who suggested that this coloration is similar to a bird dropping and likely protects individuals from predation. The location where we found EAP0804 and EAP0815 is separated by at least 60 km (straight-line distance) from the closest locality where *P. pardalis* has been recorded. The new site represents an additional and isolated locality for this species, and I suggest that populations on the Caribbean slopes of the Cordillera de Talamanca require further study to evaluate if they truly represent *P. pardalis* (*sensu stricto*). Although we conducted a nocturnal search at the site, additional individuals of *P. pardalis* were neither seen nor heard calling.

The adult male *B. minutula* (EAP0812, UCR22886, SL: 32.4 mm) agrees well with the original description of the species (Wake et al., 1973), as well as with the information provided by Savage (2002). *Bolitoglossa minutula* is easily identified by its stocky body, completely webbed hands and feet, and by the presence of white mottling on the head. This specimen represents the first record of this uncommon species from the Caribbean slopes of the Cordillera de Talamanca. Additionally, this discovery extends the lower limit of the elevational range of *B. minutula* down to 1,500 m, which is 170 m lower than the previous known record (1,670–2,660 m; Savage, 2002).

These discoveries represent the first verified records of these two uncommon species for the Caribbean versant of Costa Rica. Additionally, they also suggest the possibility that more species remain to be discovered in this region the country, and perhaps some undescribed taxa. Furthermore, these new records indicate that the putative areas inhabited by these species are larger than previously thought, and likely involve the vast undisturbed forests of Parque Internacional La Amistad. The discovery of *P. pardalis* and *B. minutula* within the extensive protected forests along the mid-elevation Caribbean slopes of Costa Rica suggests that the conservation status for these species is better than previously speculated, and might warrant a reevaluation of their IUCN status. These findings also could be an indicator that future exploration in this area of Costa Rica eventually might provide a more optimistic outlook on the conservation status of several amphibian species in Costa Rica.

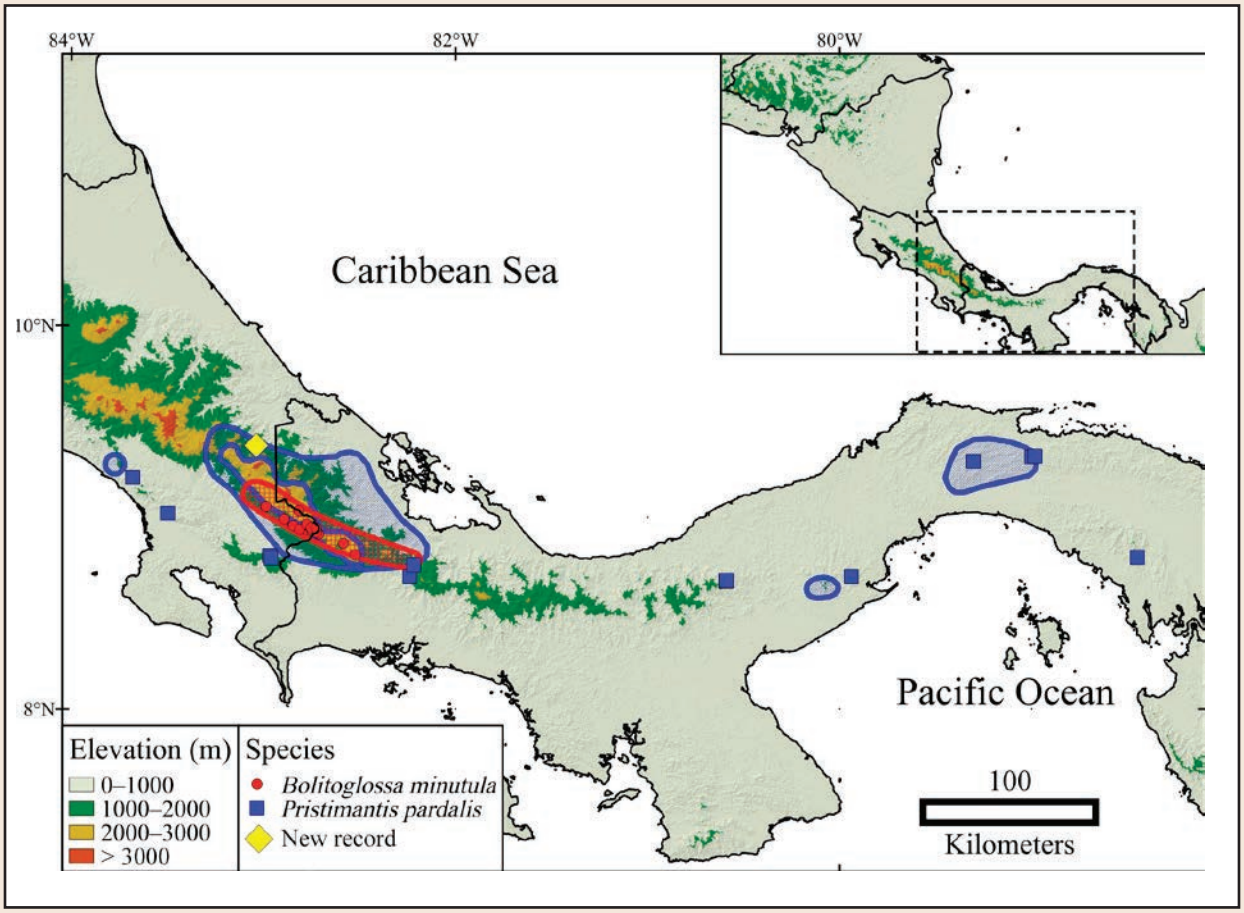

Fig. 1. Map showing the previously believed distributions of *Bolitoglossa minutula* (red) and *Pristimantis pardalis* (blue) in Lower Central America, in addition to the newly discovered locality for both species (yellow diamond). The above distribution data is courtesy of the IUCN Red List.

Fig. 2. *Pristimantis pardalis* discovered along the Caribbean foothills of the Cordillera de Talamanca, Costa Rica. (A) an adult female (EAP0804); and (B) a juvenile (EAP0815). © Erick Arias

Fig. 3. An adult *Bolitoglossa minutula* (EAP0812) found in the Caribbean foothills of the Cordillera de Talamanca, Costa Rica. © Erick Arias

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Reptilia: Squamata (lizards)

Family Dactyloidae

***Norops macrinii* (Smith, 1968).** MEXICO: OAXACA. Municipio de Santa Catarina Juquila, near El Obispo (16.175215°N, -97.322873°W; datum WGS 84), elev. 1,216 m.; 16 June 2016. Eduardo Mata-Silva, Vicente Mata-Silva, Dominic, L. DeSantis, Elí García-Padilla, and Larry David Wilson. The specimen (CIB-5089) is deposited in the herpetological collection of the Centro de Investigaciones Biológicas of the Universidad Autónoma del Estado de Hidalgo. The lizard, a juvenile female (Fig. 1), was found in pine-oak forest, sleeping on a bush in riparian vegetation. This individual represents a new municipality record, and extends the range ca. 100 km to the WNW of various localities in the "coffee growing region and forested hills north of the city of San Pedro Pochutla" (Köhler et al., 2013; 2014). Wilson and Townsend (2010) and Wilson et al. (2013) rated the conservation status of this species as of high vulnerability, and SEMARNAT (2010) lists it under Special Protection category; however, this species has been assessed as Least Concern (LC) by the IUCN (www.iucnredlist.org; accessed 7 December 2016).

Fig. 1. A young female *Norops macrinii* (CIB-5089) from near El Obispo, Municipio de Santa Catarina Juquila, Oaxaca, Mexico.
© Vicente Mata-Silva

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Family Eublepharidae

***Coleonyx mitratus* (Peters, 1863).** NICARAGUA: ATLÁNTICO NORTE: Municipio de Siuna, Comarca Danlí (13.67647°N, 84.89391°W; WGS 84); elev. 105 m; 31 March 2017; Allan A. Gutiérrez Rodríguez, Deyanira Monge Arróliga, and José A. Rivera Blandón. Photo vouchers of two individuals are deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8878, 8879; Fig. 1A, B). We found two adults, a male (Fig. 1A) and a female (Fig. 1B), at night (1930 h) while active on leaf-litter in a Teak plantation, located in disturbed Lowland Moist Forest (Holdridge, 1967; Savage, 2002); several leaf-litter ant (*Atta cephalotes*) nests were present in the area. ATLÁNTICO SUR: Nueva Guinea, Comarca La Fonseca (11.57930°N, 84.33008°W; WGS 84); elev. 125 m; 12 April 2013; José G. Martínez-Fonseca, Luis Gutiérrez-López, Marlon Chávez, and Lenin A. Obando. A photo voucher of this individual is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8880; Fig. 1C). The lizard was found active on the ground at night (2320 h) near a small stream. ATLÁNTICO SUR: Bluefields, Cerro El Frijol (12.02438°N, 83.86363°W; WGS 84); elev. 28 m; 13 October 2013; Milton Salazar-Saavedra and Arnulfo Medina-Fitoria. A photo voucher of this individual is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8881; Fig. 1D). The lizard

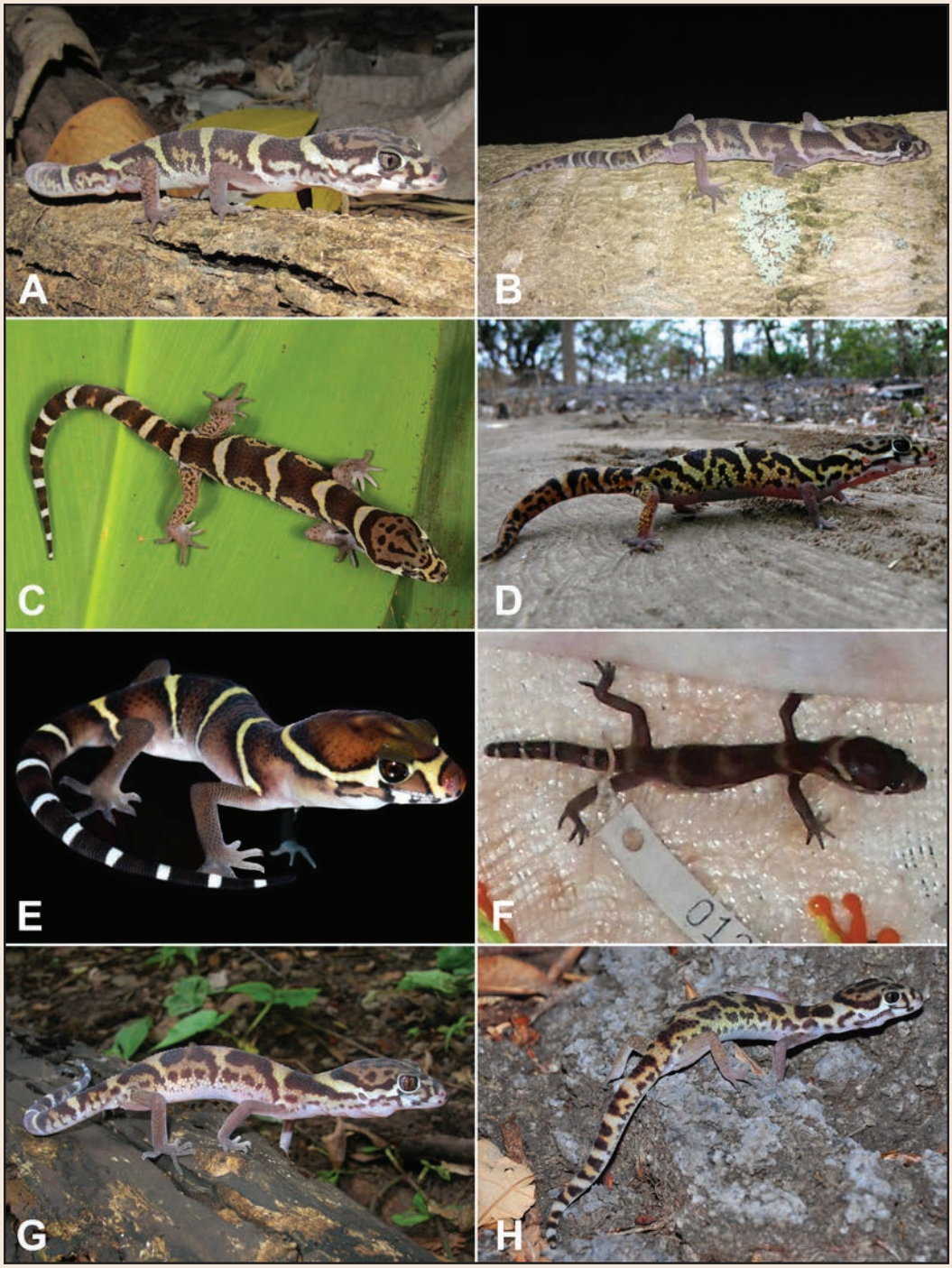

Fig. 1. Photographs of *Coleonyx mitratus* being reported from new departments in Nicaragua: (A) An adult female and (B) an adult male from Danlí, Departamento de Atlántico Norte; (C) an adult individual from Nueva Guinea, and (D) an individual from Cerro El Frijol, Departamento Atlántico Sur; (E) an individual from Boaco, Departamento de Boaco; (F) a preserved juvenile from Reserva Natural Volcán Mombacho, Departamento de Granada; (G) an adult female from Lost Canyon Nature Reserve, Departamento de León; and (H) an individual from Parque Nacional Volcán Masaya, Departamento de Masaya.

was found active on leaf litter at night (2115 h). All records from the department of Atlántico Sur are from Lowland Moist Forest (Holdridge, 1967; Savage, 2002). BOACO: Boaco (12.51598°N, 85.67155°W; WGS 84); elev. 435 m; 9 June 2014; Milton Salazar-Saavedra and Juan Méndez. A photo voucher of this individual is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8882; Fig. 1E). The lizard was found active at night (2045 h) in a rocky area near a river that passes through the city of Boaco, in Lowland Moist Forest (Holdridge, 1967; Savage, 2002). GRANADA: Reserva Natural Volcán Mombacho (11.83831°N, 85.99277°W; WGS 84); elev. 740 m; 19 May 2010; Javier Sunyer, Kirsten E. Nicholson, John G. Phillips, Jenny A. Gubler, and Lenin A. Obando. A photo voucher of this preserved juvenile is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8883; Fig. 1F). The lizard was found active at night on a wall between an artificial pond and some vegetation, in Premontane Moist Forest (Holdridge, 1967; Savage, 2002). JS observed two other juveniles on the ground in October of 2009, in the main parking area at Reserva Natural Volcán Mombacho (elev. ca. 200 m), in Lowland Dry Forest (Holdridge, 1967; Savage, 2002). LEÓN: El Jicaral, San Juan de Dios, Lost Canyon Nature Reserve (12.72801°N, 86.42584°W; datum WGS 84); elev. 145 m; 28 May 2007; Javier Sunyer, Lenin A. Obando, and Richard Leonardi. SMF 87248. A photo voucher of this individual, an adult female, is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8884; Fig. 1G). The lizard was found active on the ground in the evening, in rather disturbed Lowland Dry Forest in transition to Arid Forest (Holdridge, 1967; Savage, 2002). MASAYA: Parque Nacional Volcán Masaya, entrance of Cueva La Bruja (11.97952°N, 86.16771°W; WGS 84); elev. 485 m; 5 September 2009; José G. Martínez-Fonseca, Abigail Arauz, and Gabriel López. A photo voucher of this individual is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8885; Fig. 1H). JGMF has observed this species active at night on several occasions, along the entrance of this cave. Conceivably, the guano produced by the over 45,000 bats known to inhabit this cave attracts many insects, which are potential prey for *C. mitratus*. MASAYA: Parque Nacional Volcán Masaya, trail Los Coyotes (11.97352°N, 86.12505°W; WGS 84); elev. 135 m; 13 February 2010; Javier Sunyer, José G. Martínez-Fonseca, Milton Salazar-Saavedra, Amaru Ruiz Alemán, and Gabriel López. A photo voucher of this juvenile is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8886; Fig. 2A). The lizard was found on the ground at night (2135 h), crossing a trail near Laguna de Masaya, in well-protected Lowland Dry Forest (Holdridge, 1967; Savage, 2002). MASAYA: Parque Nacional Volcán Masaya, visitor center (12.00343°N, 86.14809°W; WGS 84); elev. 315 m; 13 February 2010; Javier Sunyer, José G. Martínez-Fonseca, Milton Salazar-Saavedra, Amaru Ruiz Alemán, and Gabriel López. A photo voucher of this individual is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8887; Fig. 2B). The lizard was found active around midnight in a small garden within the visitor center's balcony. All records from the department of Masaya are from Lowland Dry Forest (Holdridge, 1967; Savage, 2002).

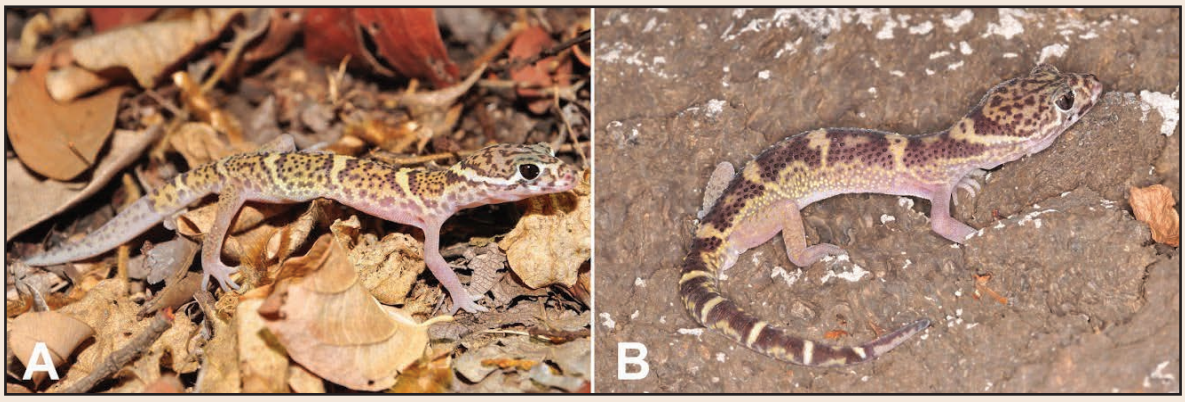

Fig. 2. Photographs of *Coleonyx mitratus* being reported from new departments in Nicaragua (continued): (A) A juvenile and (B) and an adult individual from Parque Nacional Volcán Masaya, Departamento de Masaya.

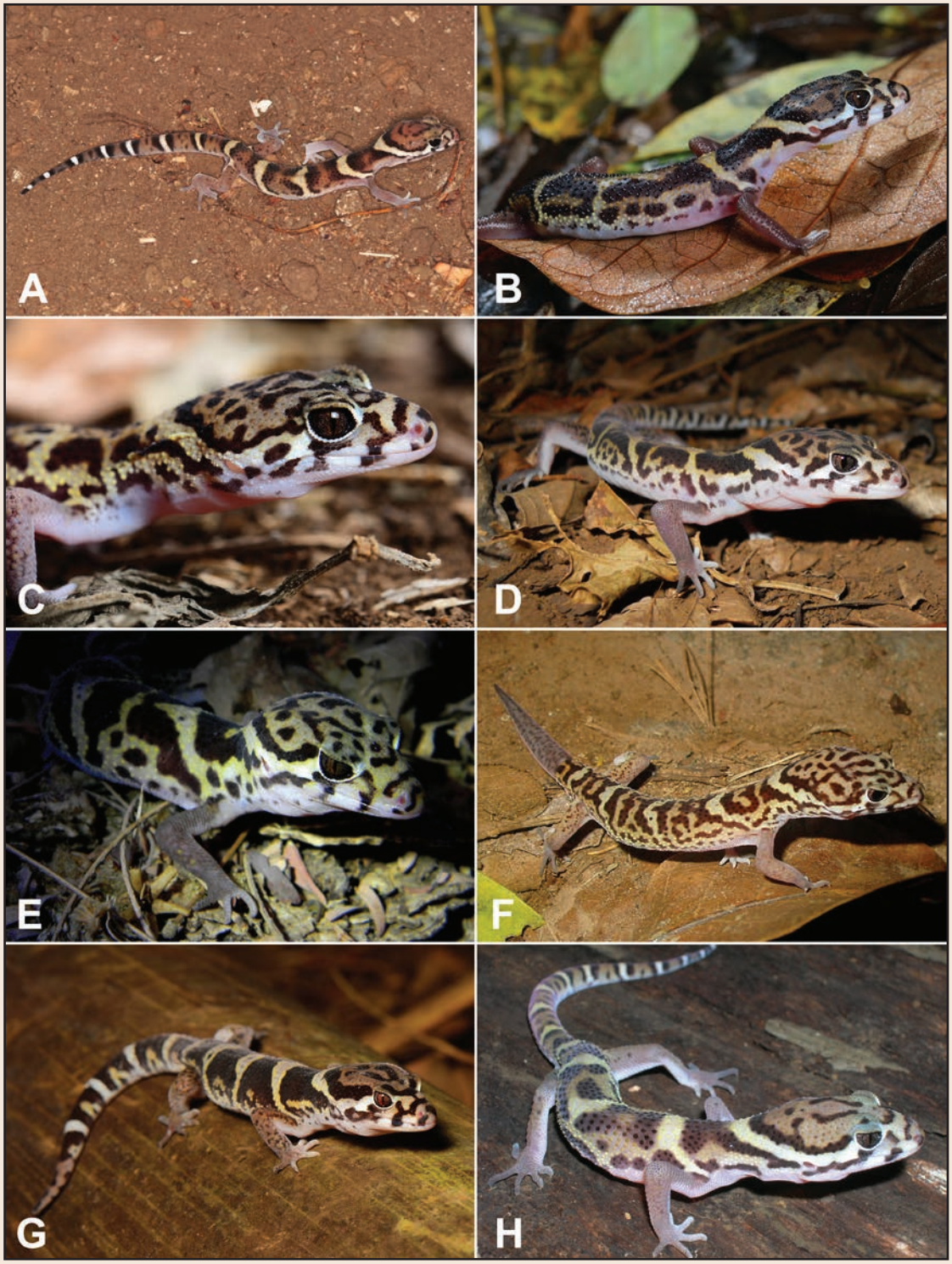

Fig. 3. Photographs of *Coleonyx mitratus* from localities in Nicaraguan departments where this species previously has been recorted: (A) Finca La Joya, (B) Reserva Silvestre Privada Concepción de María, and (C) Loma Alegre, Departamento de Carazo; (D) Volcán Casitas, Departamento de Chinandega; (E) Reserva Silvestre Privada Hato Nuevo, and (F) Reserva Natural Volcán Cosigüina, Deaprtament de Chinandega; (G) San Miguelito, Departamento de Río San Juan; and (H) Morgan's Rock, Departamento de Rivas.

Fig. 4. Photographs of *Coleonyx mitratus* from localities in Nicaraguan departments where this species previously has been recorded (continued): (A) Reserva de la Biosfera Isla de Ometepe, Peña Inculta la Cabuya (juvenile), (B) Reserva de la Biosfera Isla de Ometepe, Punta El Culco, (C) Reserva Silvestre Privada El Abuelo, and (D) Reserva Silvestre Privada Escameca Grande, Departamento de Rivas. © Javier Sunyer (A), Silvia J. Robleto (B), and José G. Martínez-Fonseca (C, D)

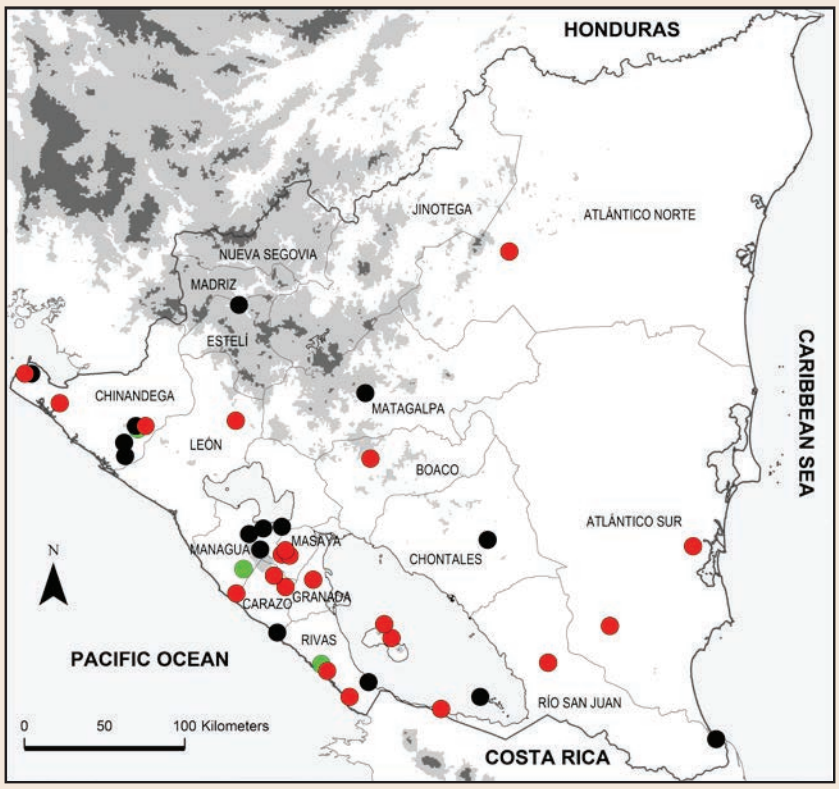

Fig. 5. Geographic distribution of *Coleonyx mitratus* in Nicaragua showing new records (red), personal observations (green), and historical records (black) of this species in the country. Details of each locality are provided in the text and appendix. Bodies of water are pale gray. Elevations above 600 m are gray, and above 1,200 m dark gray.

The above localities represent new departmental records for Atlántico Norte, Atlántico Sur, Boaco, Granada, León, and Masaya, respectively. In Nicaragua, this species previously has been recorded at elevations below 960 m in the following departments: Carazo, Chinandega, Chontales, Estelí, Managua, Río San Juan, and Rivas (Vences et al., 1998; Köhler, 2001; Salazar et al., 2009; Barquero et al., 2010; Sunyer and Köhler, 2010; HerpetoNicas, 2015; Spangler, 2015). Gómez et al. (2011) additionally recorded *C. mitratus* from the department of Matagalpa, but did not provide a voucher specimen or photographs to verify their record.

Additionally, we include other unpublished localities (see Appendix 1) and photographs (Figs. 3, 4) of *C. mitratus* from Nicaraguan departments where this species is known to occur, to show variation (individual and ontogenetic) within the country, and also provide an updated map of the distribution of this species in Nicaragua (Fig. 5) based on historical records complemented with our own.

Coleonyx mitratus is distributed from Guatemala southward to south-central Costa Rica on the Pacific versant, as well as in the Atlantic lowlands of northeastern Guatemala and northwestern Honduras (Chaves et al., 2013). In Nicaragua, the species was known from 16 specific localities from eight departments (Vences et al., 1998; Köhler, 2001; Salazar et al., 2009; Barquero et al., 2010; Gómez et al., 2011; and HerpetoNicas, 2015), and we here provide 24 additional localities that include six new departmental records, which considerably extend the known distribution of this species in the country.

Although *C. mitratus* is listed as a species of Least Concern (Chaves et al., 2013), in Nicaragua this nocturnal and terrestrial lizard has been gauged as a species of Medium Vulnerability (Sunyer and Köhler, 2010), because of the erroneous belief that it is venomous, and thus normally is killed on sight by people. In addition, this species occasionally is used in the pet trade (Chaves et al., 2013), although is not included in any of the CITES appendices. (www.cites.org/).

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Appendix 1. Additional new localities of *Coleonyx mitratus* from Nicaraguan departments where this species previously has been recorded.

NICARAGUA: CARAZO: Municipio de Santa Teresa, Finca La Joya (11.79700°N, 86.14734°W; WGS 84); elev. 370 m; 4 November 2010; José G. Martínez-Fonseca. Fig. 3A. CARAZO: Municipio de Dolores, Reserva Silvestre Privada Concepción de María (11.86094°N, 86.21202°W; WGS 84); elev. 600 m; 20 November 2015; José G. Martínez-Fonseca, Abigail Arauz, and Luis Gutiérrez-López. Fig. 3B. CARAZO: Municipio de Diriamba, Loma Alegre (11.76094°N, 86.42354°W; WGS 84); elev. 45 m; 4 January 2017; José G. Martínez-Fonseca and Luis Gutiérrez-López. Fig. 3C. CHINANDEGA: Northern slope of Reserva Natural Volcán Casitas (12.69895°N, 86.93278°W; WGS 84); elev. 570 m; 11 May 2010; José G. Martínez-Fonseca and Milton Salazar-Saavedra. Fig. 3D. CHINANDEGA: Reserva Silvestre Privada Hato Nuevo (12.82664°N, 87.41356°W; WGS 84); elev. 47 m; 3 April 2012; Milton Salazar-Saavedra, Mayra Aleman, and Daniel Urbina. Fig. 3E. CHINANDEGA: Reserva Natural Volcán Cosigüina (12.99159°N, 87.60878°W; WGS 84); elev. 270 m; 24 May 2004; Matt O'Driscoll and Milton Salazar-Saavedra. Fig. 3F. RÍO SAN JUAN: Comarca el Roble, San Miguelito (11.37360°N, 84.67604°W; WGS 84); elev. 65 m; 4 November 2014; José G. Martínez-Fonseca, Luis Gutiérrez-López, and Marlon Chávez-Velásquez. Fig. 3G. RIVAS: Morgan's Rock, La Finca (11.32692°N, 85.91389°W; WGS 84); elev. 35 m; 10 September 2006; Javier Sunyer, Lenin A. Obando, and Darwin E. Manzanarez. Fig. 3H. RIVAS: Reserva de la Biosfera Isla de Ometepe, Peña Inculta la Cabuya (11.51150°N, 85.55467°W; WGS 84); elev. 45 m; 28 July 2007; Javier Sunyer, Billy M. Alemán Pérez, Silvia J. Robleto, and Iris Garbayo. SMF 87249. Juvenile. Fig. 4A. RIVAS: Reserva de la Biosfera Isla de Ometepe, Municipio de Altagracia, Punta El Culco (11.58892°N, 85.59492°W; WGS 84); elev. 40 m; 2008; Silvia J. Robleto. Fig. 4B. RIVAS: Municipio de Cárdenas, Reserva Silvestre Privada El Abuelo (11.11448°N, 85.27606°W; WGS 84); elev. 45 m; 28 November 2012; José G. Martínez-Fonseca and Milton Salazar-Saavedra. Fig. 4C. RIVAS: Municipio de San Juan del Sur, Reserva Silvestre Privada Escameca Grande (11.18149°N, 85.78802°W; WGS 84); elev. 30 m; 14 March 2016; José G. Martínez-Fonseca and Luis Gutiérrez-López. Fig. 4D.

Additional observations of *C. mitratus* that lack voucher specimens or photographs: (1) an observation in 2002 by JS on the southern slope of Reserva Natural Volcán Casitas, trail from Pikin Guerrero to summit, ca. 800 m elev., Departamento de Chinandega; (2) an observation in 2014 by AAGR from Brito, Departamento de Rivas; and (3) an observation in 2015 by Billy M. Alemán Pérez from San Rafael del Sur, Río Jesús (11.89757°N, 86.38344°W; WGS 84); elev. 240 m, Departamento de Managua.

Family Gekkonidae

***Gehyra mutilata* (Wiegmann, 1834).** MEXICO: COLIMA: Isla Clarión, Islas Revillagigedo (18°21.250'N, 114°43.365'W; WGS 84) elev. 20 m; 25 October 2016; Erick González-Medina and Diego Adolfo González-Zamora. Two photographic vouchers of this individual are deposited in the University of Texas at El Paso Vertebrate Digital Collection (Photo Vouchers UTEP G-2017.13 and G-2017.14; Fig. 1). This individual represents a new herpetofaunal record for Isla Clarión. *Gehyra mutilata* is one of the world's most widely distributed geckos, occurring in the Pacific Basin, and large regions of Southeast Asia and the Indian Ocean (Fisher, 1997). In Mexico, this species is found in most port cities on both coasts, and has moved inland through shipping and other aspects of human transportation (Lemos-Espinal and Dixon, 2013); it has been recorded from the states of Baja California Sur (Reynoso, 1990), Sinaloa (Smith and Taylor, 1950), Nayarit (Woolrich-Piña et al., 2016), Jalisco (Ponce-Campos and Huerta-Ortega, 2001), San Luis Potosí (Lemos-Espinal and Dixon, 2013), Guerrero (Flores-Villela et al., 1991), and Chiapas (Alvarez del Toro, 1983).

The individual was found among construction materials that had been transported from the mainland to remodel the Mexican Navy's garrison buildings on Isla Clarión, and might have been brought to the island with those materials from the Port of Manzanillo, Colima. This finding is an example of how easily introduced species can access remote sites. In the case of Isla Clarión, its remoteness and fragile ecosystem makes it particularly susceptible to invasive species, and continued efforts should be made to prevent and eradicate their introduction (Mulcahy et al., 2014). Special care and examination of building materials brought to the island should be incorporated into the mandatory management procedures.

Fig. 1. (A, B) *Gehyra mutilata* from Isla Clarión, Islas Revillagigedo, Colima, Mexico.
© Erick González-Medina (A) and Diego A. González-Zamora (B)

Acknowledgments.—We thank Arthur Harris for providing the photo voucher number, Louis W. Porras and Aaron Bauer for verifying the identification of the species. Fieldwork was funded by a grant (PROCER/CCER/DRPBCPN/13/2016) issued to Terra Peninsular, A.C., by Programa de Recuperación y Repoblación de Especies en Riesgo 2016. The fieldwork was conducted under permits SATI/PC/029/16 and DIR/RBAR/2016, issued to José Alfredo Castillo-Guerrero by the Secretaria de Gobernación (SEGOB) and Comisión Nacional de Áreas Naturales Protegidas (CONANP). The Mexican Navy provided transportation to the island and lodging during our stay.

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***Hemidactylus turcicus* (Linnaeus, 1758).** MEXICO: BAJA CALIFORNIA: Municipio de Tijuana, Tijuana, Colonia Mesetas del Guaycura (32.50893°N, 116.91772°W; WGS 84), elev. 125 m; 10 August 2016; Rigoberto Aguilar. Naturalista (observation number: 3857361; www.naturalista.mx). This observation represents the first record for this species in the municipality of Tijuana, and a range extension of ca. 18 km to the S from nearest record in Chula Vista, San Diego County, California, United States (observation number: 3487804; www.inaturalist.org). Two individuals (an adult and juvenile) were found on a house wall in the eastern portion of Tijuana (Fig. 1). Two additional individuals were seen in the same house, suggesting that the species is established in this part of the city. This voucher represents the second confirmed location for this gecko in Baja California, with the first observation in the state located 75 km to the S in Ensenada, Municipio de Ensenada (Martinez-Isac and Valdez-Villavicencio, 2000).

Fig. 1. Adult (left) and juvenile (right) individuals of *Hemidactylus turcicus* from Tijuana, Municipio de Tijuana, Baja California, Mexico (www.naturalista.mx/observations/3857361).
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Family Xantusiidae

***Lepidophyma tuxtlae* Werler and Shannon, 1957**. MEXICO: VERACRUZ: Municipio de Zongolica, eastern slope of Cerro Huehuexcaltepetl, Aticpac (18.571275°N, 96.88871°W; datum WGS 84); elev. 635 m; 30 April 2016; Diego García-Morales and Juan Carlos Sánchez-García. The lizard (MZFZ-3410) was found inside of a tree trunk, in evergreen forest with remnant patches of corn and coffee. Another individual (MZFZ-3412) was collected under a log in similar habitat at Aticpac (18.571519°N, 96.885183°W); elev. 554 m; 30 August 2016; Diego García-Morales and Romina Itzel Cervantes-Burgos. These individuals represent a new municipality record, with the closest known localities 11.5 km to the NW in the vicinity of el Tepeyac, Eloxochitlán, Puebla, and 117 km to the W in Los Tuxtlas, San Andrés Tuxtla, Veracruz (García-Vázquez et al., 2010). Both specimens are deposited in Herpetological collection, Museo de Zoología, Facultad de Estudios Superiores Zaragoza, Universidad Nacional Autónoma de México.

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Reptilia: Squamata (snakes)

First verified locality for *Drymobius margaritiferus* (Schlegel, 1837) from Estado de México, Mexico

Drymobius margaritiferus is a colubrid with broad distribution that extends from southern Texas, United States, to northern Colombia, on the Atlantic versant, and on the Pacific versant from Texas and southern Sonora to central Panama (Canseco-Márquez and Gutierréz-Mayen, 2010; McCranie, 2011). This species is known to occur at elevations from sea level to 2,000 m (Köhler, 2008; Wilson and Johnson, 2010), and inhabits tropical subdeciduos forest, tropical deciduous forest, thorn forest, and riparian vegetation (Wilson, 1974; Castro-Franco and Bustos, 1994; González et al., 2010). In Mexico, *D. margaritiferus* is distributed in several biogeographic regions, including the Gulf Coastal Plain, the Pacific Coastal Plain, the Sierra Madre Oriental, the Balsas Basin, the Trans-Mexican Volcanic Belt, and the Sierra Madre del Sur (Casas-Andreu et al., 1996; García-Vázquez et al., 2009; Medina-Aguilar et al., 2011; Johnson et al., 2015). Aguilar Miguel et al. (1997) initially reported this species from Estado de México, but did not indicate a specific locality; subsequently, Aguilar Miguel (2007), Aguilar and Casas Andreu (2009), and Aguilar et al. (2009) recorded this species from the state, but did not provide voucher numbers or locality information.

On 17 March 2017 at 1320 h, in Zacatepec, Municipio de Tejupilco, Estado de México (18.89603°N, 100.13075°W; WGS 84; elev. 1,300 m), we collected a female *D. margaritiferus* along the bank of a creek called Rincón del Carmen. This individual (Fig. 1) represents a range extension of ca.145 km (airline distance) to the SE of the nearest reported locality at Tacámbaro, Michoacán (Medina-Aguilar et al., 2011). The specimen is deposited in the Herpetological Collection, Museo de Zoología, Facultad de Estudios Superiores Zaragoza, Universidad Nacional Autónoma de México (MZFZ-3416). This specimen represents the first verified record of this species in Estado de Mexico, in addition to a new municipality record.

Fig. 1. A female *Drymobius margaritiferus* (MZFZ 03416) found in Zacatepec, Municipio de Tejupilco, Estado de México, México. © Antonio Esaú Valdenegro-Brito

Acknowledgments.—Support for our fieldwork was provided by a grant from the Dirección General de Apoyo al Personal Académico, Universidad Nacional Autónoma de México (PAPIIT-IN 221016) issued to Uri Omar García-Vázquez. The fieldwork was conducted under a collecting permit issued to Uri Omar García-Vázquez by the Secretaría de Medio Ambiente y Recursos Naturales (permit number FAUT-0243).

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New records for *Lampropeltis polyzona* Cope, 1860 (Reptilia: Squamata: Colubridae), from Guanajuato, Mexico

The colubrid *Lampropeltis polyzona* is a Mexican endemic distributed from southern Sonora to southern Guerrero on the Pacific side of the country, and throughout the southern Mexican Plateau eastward to Veracruz and northern Oaxaca (Ruane et al., 2014; Heimes, 2016). The elevational range of this species has been reported from sea level to about 3,000 m (Heimes, 2016). Ruane et al. (2014) suggested the possible presence of this species in the states of Guanajuato, Morelos, Nayarit, and San Luis Potosí. We became aware of two specimens (USNM 46552.6186253 and USNM 12680.6186243) that were collected in the state of Guanajuato and deposited in the National Museum of Natural History, Smithsonian Institution (VertNet, 2017). USNM 46552.6186253 was collected in Acámbaro in 1892, and USNM 12680.6186243 was found in 1881, but lacks specific locality information. The species also is known to occur in Cerro de Arandas (Uriarte-Garzón, 2012; Leyte-Manrique et al., 2015), located to the northeast of Irapuato, and in a locality cited as "3.5 km NNW of La Moncada," Municipio de Tarimoro (Arenas-Reynoso and Carbajal-Marquez, 2012). Herein, we provide additional records of *L. polyzona* in several localities in the southern portion of the state. The reported individuals originated from three municipalities. Five specimens are deposited at the Laboratorio de Biología del Instituto Tecnológico Superior de Salvatierra (ITESS-CH); one is deposited at the Laboratorio de Biología del Instituto Tecnológico Superior de Irapuato (ITESI-CH), and one photo voucher is deposited in the University of Texas at El Paso Biodiversity Digital Collection (UTEP). The geographical data is presented in WGS 84. All specimens were collected by ALM.

(1) Municipio de Irapuato, El Copal (20°45'13"N, 101°20'03"W); elev. 1,775 m; 23 September 2011. The snake (ITESI-CH-0023; Fig. 1A) was found active at 1300 h, on a paved parking lot at ITESI, with the surrounding habitat consisting of patches of secondary growth within tropical deciduous forest; however, these vegetation remnants currently are being eliminated by construction for a housing development.

(2) Municipio de Irapuato, El Copal (20°45'15.3"N, 101°19'58.3"W); elev. 1,775 m; 1 December 2016. The snake (UTEPObs: Herp:106; Fig. 1B) was found at 13 h, between planks of wood in habitat consisting of patches of secondary growth within tropical deciduous forest.

(3) Municipio de Manuel Doblado, Las Musas (ANP), El Potrero (20°37'18"N, 101°37'18.7"W); elev. 1,776 m; 30 September 2016. The snake (SVL = 484 mm; ITESS-CH-0060; Fig. 1C) was found at 2122 h, in a pasture located near a dam.

(4) Municipio de Salvatierra, San José del Carmen (20°16'15.48"N, 100°56'24.55"W); elev. 1,775 m; 17 October 2015. The individual (SVL = 259 mm; ITESS-CH-0055; Fig. 1D) was found at 1800 h, on a dirt road bordered by cornfields and secondary vegetation.

(5) Municipio de Salvatierra, Maravatío del Encinal (20°12'14.23"N, 100°57'40.3"W); elev. 1,751 m; 4 December 2015. The individual (SVL = 670 mm; ITESS-CH-0057; Fig. 1E) was found in a patch of grass surrounded by cornfields.

(6) Municipio de Salvatierra, San Nicolás de Los Agustinos (20°13'59"N, 100°59'21.4"W); elev. 1,743 m; 10 July 2015. The snake (SVL = 459 mm; ITESS-CH-0029; Fig. 1F) was found at 1700 h, under a rock in a cornfield.

(7) Municipio de Salvatierra, ITESS, Janicho (20°12'01"N, 101°54'24"W); elev. 1,765 m; 24 November 2016. The individual (SVL = 649 mm; ITESS-CH-0034; Fig. 1G) was found on sandy substrate, in an area of cornfields and patches of secondary growth within tropical deciduous forest.

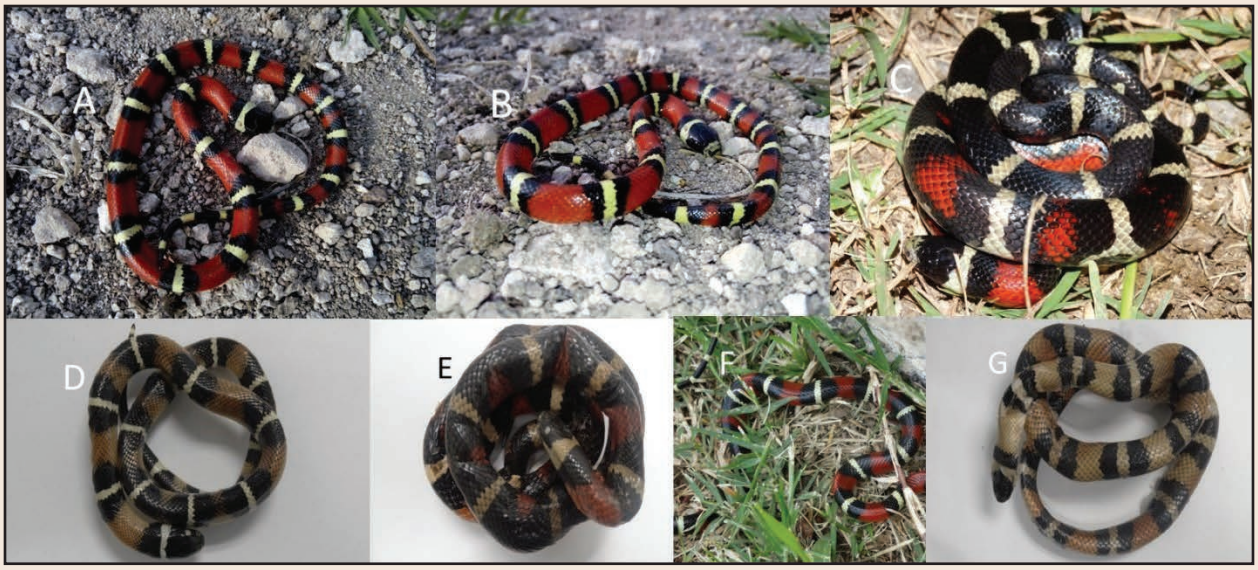

Fig. 1. Individuals of *Lampropeltis polyzona* from El Copal, Municipio de Irapuato (A, B); Las Musas, Municipio de Manuel Doblado (C); San José del Carmen (D), Maravatío del Encinal (E), San Nicolás de los Agustinos (F), and ITESS, Janicho (G), Municipio de Salvatierra, Guanajuato, Mexico. © Adrian Leyte-Manrique

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Family Colubridae

***Senticolis triaspis* (Cope, 1866)**. NICARAGUA: ATLÁNTICO SUR: Bodega, Río Kukra, ca. 25 km SW of Bluefields (11.86775°N, 83.96654°W; WGS 84); elev. 10 m; 19 March 2003; Allan Antonio Gutiérrez Rodríguez. A photo voucher of this individual, an adult female measuring 115 cm in snout–vent length, is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8869; Fig. 1.). The snake was active at 1000 h, in a pasture with sparse trees along a bank of the Río Kukra, in an area consisting of Tropical Moist Forest (Holdridge, 1967). This locality represents a new departmental record for Atlántico Sur, as well as the lowest elevation and easternmost record for this species in the country, and extends its distribution ca. 215 km to the E from its closest reported locality (Köhler, 2001). In Nicaragua, this species has been recorded at elevations from 245 to 1,100 m, in the following departments: Carazo, Chinandega, Estelí, Granada, Jinotega, Managua, Masaya, and Matagalpa (Dowling, 1960; Dowling and Fries, 1987; Vences et al., 1998, Köhler, 2001; HerpetoNicas, 2015; Ubeda-Olivas and Sunyer, 2015; Martínez-Fonseca et al., 2016). HerpetoNicas (2015) erroneously recorded this species from Nueva Guinea, Departamento Atlántico Sur, based on a photograph (Fig. 160B in HerpetoNicas, 2015). This photograph, however, corresponds to an individual from Wiwilí, Departamento de Jinotega (see Ubeda-Olivas and Sunyer, 2015).

Fig. 1. An adult female *Senticolis triaspis* (UTADC-8869) from Bodega, Río Kukra, Departamento Atlántico Sur, Nicaragua. © Gladys Luna

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Family Dipsadidae

***Diadophis punctatus* (Linnaeus, 1766).** MEXICO: HIDALGO: Municipio de Atotonilco el Grande, Amajac (20.317787°N, -98.731085°W; WGS 84); elev. 1,768 m; 22 August 2016; Juan Alfonso Hernández-Melo. A photo voucher (CH-CIB 89) is deposited in the photographic collection of the Herpetological Collection of the Centro de Investigaciones Biológicas, Universidad Autónoma del Estado de Hidalgo. This voucher (Fig. 1) represents a new municipality record, with the closest known locality ca. 24.82 km to NE (airline distance) near El Durazno, Municipio de San Agustin Tlaxiaca, Hidalgo (Lemos-Espinal and Dixon, 2016). The individual was found killed in an area of submontane scrub.

Fig 1. A *Diadophis punctatus* (CH-CIB 89) found killed at Amajac, Municipio de Atotonilco el Grande, Hidalgo, Mexico.
© Juan Alfonso Hernández-Melo

Acknowledgments.—A special thanks to Irene Goyenechea-Mayer for kindly allowing us to deposit the photo voucher in the CH-CIB Herpetological Collection.

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***Enulius flavitorques* (Cope, 1868).** COSTA RICA: PUNTARENAS: Vicinity of Playa Pavones: Golfito, Quebrada Banco (8.39196°N, 83.11921°W; WGS 84); elev. 20 m; 1 May 2014; Juan Abarca and Hector Zumbado. The individual was found on the road next to a stream (Quebrada Banco), and was photographed but not collected. A photo voucher of the individual (Fig. 1) was deposited in the University of Texas Collection of Vertebrates Digital Collection (UTADC-8892). COSTA RICA: PUNTARENAS: Golfito, Quebrada Gamba (8,66390°N, 83,20560°W); elev. 20 m; January of 2000; Federico Bolaños. The specimen (UCR 14326) was collected close to a stream (Quebrada Gamba).

McCranie (2011) indicated the distribution of *Enulius flavitorques* as extending from Chiapas, Mexico, Honduras, Panama, northern Colombia, and northwestern Venezuela, on the Atlantic versant, and on the Pacific versant from southern Jalisco, Mexico, to Panama. In Costa Rica, however, this species only has been recorded along the northwestern Pacific lowlands, the Meseta Central, and on the central Pacific as far south as the vicinity of Parrita (Savage, 2002). The only record for this species from the southern Pacific part of the country is dated from 1963 (GBIF, 2017; occurrence ID: D0B137D6-5F0B-4A90-8628-553CC8914312), but the website indicates that the georeference data requires verification. The collecting locality for this record is not clear, because it indicates that the specimen was collected in the vicinity of km 33 on the Interamerican Highway, near El Alto, which is located at a high elevation near Cerro de La Muerte; however, the geographic coordinates and the elevation (65 m) provided correspond to the area of Golfito. Thus, there is confusion between which of the locations is correct, although the highland locality is highly unlikely. Chaves et al. (2016) mapped the Golfito locality, perhaps based on the above data, and they also showed no records for this species from adjacent western Panama.

Based on the two records we are reporting (one voucher photograph, 1 museum specimen) we confirm the presence of *E. flavitorques* in southwestern Costa Rica, and extend (using UTADC-8892) the verified distribution of this species in the country ca. 182 km to the southeast of the nearest reported locality in the vicinity of Parrita, Provincia de Puntarenas (Savage, 2002).

Fig. 1. An *Enulius flavitorques* (UTADC-8892) from Quebrada Banco, Golfito, Provincia de Puntarenas, Costa Rica.
© Juan G. Abarca

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

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***Imantodes gemmistratus* (Cope, 1861).** MEXICO: NAYARIT: Municipio de Huajicori, El Muerto (Los Vergelitos), (22.695601°N, 105.254649°W; WGS 84; elev. 207 m); 6 December 2016; Jesús A. Loc-Barragán. A photo voucher of this specimen is deposited in the University of Texas at Arlington Digital Collection (Photo Voucher UTADC 8860). The snake (Fig.1) was found along the side a road in subtropical forest. This individual represents a new municipality record and a range extension of ca. 26.2 km NW (airline distance) of the closest reported locality near the town of Acaponeta, cited as "3.5 mi N Nayarit St. line, Hwy 15" (based on a specimen collected by D. Marqua on 10 July 1960, and deposited in the Herpetology Collection of the Los Angeles Natural History Museum (LACM-103528; ENCICLOVIDA, 2017).

A second individual was found in Municipio de Tepic, Cerro de la Cruz (21.538703° N, 104.883332° W; WGS 84; elev. 117 m); 22 February 2017; Grupo del Departamento de Manejo de Ecosistemas de la Dirección de Ecología y Protección al Medio Ambiente del Municipio de Tepic. The snake was found in oak forest during reforestation activities. A photo voucher was deposited at The University of Texas at Arlington Digital Collection (Photo Voucher UTADC 8861). This individual (Fig. 2) represents a municipality record, with the closest reported locality ca. 27.6 km to the NW on the road to San Blas, cited as "ca. 5 mi W of Highway 15, San Blas, Nayarit" (based on a specimen collected by Hill, R. on June 5, 1973, and deposited in the Collection of Herpetology of the San Diego Natural History Museum (SDNHM 48139; ENCICLOVIDA, 2017).

Two unpublished records are available from Tepic. The first is cited as "21 mi E San Blas," collected by Theodore J. Papenfuss on 19 December 1962, and deposited in the Herpetological Collection of the Museum of Vertebrate Zoology, University of California, Berkeley (MVZ 76710). The second is from a locality cited as "on hwy 54, 6 mi E of Santa Rd," collected by Orin Haworth on 23 June 1974, and deposited in the Herpetology Collection of the Los Angeles Natural History Museum (LACM 136824; ENCICLOVIDA, 2017).

Fig. 1. A juvenile *Imantodes gemmistratus* (UTADC 8860) from El Muerto (Los Vergelitos), Municipio de Huajicori, Nayarit, Mexico. © Jesús Alberto Loc-Barragán

Fig. 2. An adult *Imantodes gemmistratus* (UTADC 8861) from Cerro de la Cruz, Municipio de Tepic, Nayarit, Mexico. © Erika J. Gonzalez-Olvera (in association with a group from the Departamento de Manejo de Ecosistemas de la Dirección de Ecología y Protección al Medio Ambiente del Municipio de Tepic)

Acknowledgments.—I thank the team of the Departamento de Manejo de Ecosistemas de la Dirección de Ecología y Protección al Medio Ambiente del Municipio de Tepic, who participated in the program of environmental compensation in agreement with CONAFOR in Cerro de la Cruz, and appreciate their interest in learning about the herpetofauna of the Municipio de Tepic; and Carl J. Franklin for providing the photo voucher numbers.

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***Leptodeira nigrofasciata* Günther, 1868.** MEXICO: OAXACA. Municipio de Santa Catarina Juquila, Paso Hondo (16.053023°N, -97.411691°W; datum WGS 84); elev. 60 m; 13 November 2016; Eduardo Mata-Silva. The specimen (CIB-5086) is deposited in the herpetological collection of the Centro de Investigaciones Biológicas of the Universidad Autónoma del Estado de Hidalgo. This individual (female, snout–vent length = 440 mm, tail length = 118 mm; Fig. 1) represents a new municipality record, and narrows the gap between the two closest reported localities at 20 km to the W near the vicinity of Santa Cruz Tututepec, Municipio de Villa de Tututepec de Melchor Ocampo (Téllez-Escalante et al., 2016) and ca. 109 km to the E in the vicinity of Puerto Angel (La Boquilla), Municipio de San Pedro Pochutla (Schätti and Stutz, 2016). The specimen was found active at 2300 h, on a dirt road through secondary growth in an area formerly consisting of tropical dry forest

Fig. 1. A *Leptodeira nigrofasciata* (CIB-5086) from Paso Hondo, Municipio de Santa Catarina Juquila, Oaxaca, Mexico.
© Eduardo Mata-Silva

Acknowledgments.—A special thanks goes to Eduardo Mata-Silva for his invaluable assistance in the field, and to Raciel Crúz-Elizalde, Christian Berriozabal-Islas, and José Daniel Lara-Tufiño for logistical support. The collecting permit (SGPA/DGVS/04287/16) was issued by SEMARNAT to ARB with extensions to VMS, EMS, AR, EGP, DLD, and LDW. Irene G. Mayer-Goyenechea kindly provided the specimen number.

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***Leptodeira uribei* (Ramírez-Bautista and Smith, 1992).** MEXICO: OAXACA. Municipio de Villa de Tututepec de Melchor Ocampo, Río Grande (16.028256°N, -97.429309°W; datum WGS 84), elev. 43 m; 2 December 2016; Eduardo Mata-Silva. The specimen (CIB-5087) is deposited in the herpetological collection of the Centro de Investigaciones Biológicas of the Universidad Autónoma del Estado de Hidalgo. This individual (female, snout–vent length = 400 mm, tail length = 74 mm; Fig. 1) represents a new municipality record, and narrows the gap between the two closest reported localities at 475 km to the WNW in a locality cited as "30.9 km SW Vallecitos de Zaragoza on Mexico Hwy 134", Municipio de Zihuatanejo, in the state of Guerrero (Mertz et al., 2011), and 109 km to the E in the vicinity of Puerto Angel (road from Arroyo Cruz to Playa La Boquilla), Municipio de San Pedro Pochutla (Kucharzewski and Schätti, 2016). This individual represents the fourth reported specimen for the state of Oaxaca (Siria-Hernández et al., 2005; Kucharzewski and Schätti, 2016). The specimen was found at 1000 h, in the front yard of a home with fruit trees and ornamental plants, in the outskirts of the town. Geographic distribution records for this species extend along the coastal plains from the states of Jalisco to Oaxaca (Ramírez-Bautista and Smith, 1992; Ramírez-Bautista, 1994; Mijangos et al., 2006, Siria-Hernández et al. 2005; Reyes-Velasco et al., 2009; Reyes-Velasco and Mulcahy, 2010; Mertz et al., 2011; Kucharzewski and Schätti, 2016). Siria-Hernández et al. (2005) reported *Leptodeira uribei* in Oaxaca, but this species was not included in the species composition analysis by Mata-Silva et al. (2015).

Fig. 1. A *Leptodeira uribei* (CIB-5087) from Río Grande, Municipio de Villa de Tututepec de Melchor Ocampo, Oaxaca, Mexico. © Eduardo Mata-Silva

Acknowledgments.—A special thanks goes to Eduardo Mata-Silva for his invaluable assistance in the field, and to Raciel Crúz-Elizalde, Christian Berriozabal-Islas, and José Daniel Lara-Tufiño for logistical support. The collecting permit (SGPA/DGVS/04287/16) was issued by SEMARNAT to ARB with extensions to VMS, EMS, AR, EGP, DLD, and LDW. Irene G. Mayer-Goyenechea kindly provided the specimen number.

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***Manolepis putnami* (Jan, 1863).** The distribution of the snake *Manolepis putnami* has been reported as from low to moderate elevations on the Pacific versant of Mexico from Nayarit to Chiapas south to the Isthmus of Tehuantepec, and the adjacent western slope of the Sierra Madre de Chiapas (see Heimes, 2016, and references therein). Here, we provide three distributional records from two additional municipalities in the state of Oaxaca. The three specimens are deposited in the herpetological collection of the Centro de Investigaciones Biológicas of the Universidad Autónoma del Estado de Hidalgo.

MEXICO: OAXACA. Municipio de Santa Catarina Juquila. We are reporting two individuals from this municipality. The first (CIB-5079) was found near Pie del Cerro (16.099490°N, -97.390563°W; datum WGS 84); elev. 132 m; 15 June 2016; Vicente Mata-Silva, Dominic DeSantis, Elí García-Padilla, and Larry David Wilson. The second individual (CIB-5080) was found at Cerro del Rey (16.028994°N, -97.408072°W; datum WGS 84); elev. 353 m; 26 June 2016; Vicente Mata-Silva and Arturo Rocha. These two individuals represent a new municipality record,

and fill a gap between the closest reported localities at ca. 20 and 25 km (from Cerro del Rey and Pie del Cerro, respectively) to the SW in Parque Nacional Lagunas de Chacahua, Municipio de Villa de Tututepec de Melchor Ocampo (García-Grajales et al., 2016) and 37 and 39 km (from Cerro del Rey and Pie del Cerro, respectively) to the E at Jardin Botánico de la Universidad del Mar, Municipio de San Pedro Mixtepec (Sánchez-de la Vega et al., 2012). The specimen from Cerro del Rey (Fig. 1A) was found active on plant litter in tropical deciduous forest, and the one from near Pie del Cerro (Fig. 1B) was found dead on a paved road through secondary vegetation, in what formerly consisted of tropical deciduous forest.

MEXICO: OAXACA. Municipio de Villa de Sola de Vega, Los Limones (16.380494°N, -97.076556°W; datum WGS 84); elev. 997 m; 22 December 2016; Eduardo Mata-Silva and Vicente Mata-Silva. This specimen (CIB-5088) represents a new municipality record, and extends the distribution at 45 km to the NE of the record found at Pie del Cerro, Municipio de Santa Catarina Juquila (reported herein). The specimen (Fig. 1C) was found active at 1840 h crossing highway 131, which cuts through tropical deciduous forest. This individual also represents the first published report of *M. putnami* in the Montañas y Valles del Occidente physiographic region (see Mata-Silva et al., 2015).

Fig. 1. Individuals of *Manolepis putnami* from Oaxaca, Mexico: (A) near Pie del Cerro (CIB 5079) and (B) Cerro del Rey (CIB 5080), Municipio de Santa Catarina Juquila; and (C) from Los Limones (CIB-5088), Municipio de Villa de Sola de Vega. © Vicente Mata-Silva

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Rhadinaea gaigeae **Bailey, 1937.** MEXICO: HIDALGO: Municipio de Atotonilco el Grande, Padre Nuestro (20.318889°N, -98.589664°W; WGS 84) elev. 1,621m; 2 June 2016; Juan Alfonso Hernández-Melo. A photo voucher (CH-CIB 88; 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 the first record of the species in the municipality, with the closest known locality ca. 20.53 km to the NE (airline distance) near Parque Nacional el Chico, Municipio de Mineral del Chico, Hidalgo (Ramírez-Bautista et al., 2010). The individual was found near a stream in thorn forest.

Acknowledgments.—A special thanks goes to Irene Goyenechea-Mayer for kindly allowing us to deposit the photo voucher in the CH-CIB Herpetological Collection.

Fig 1. A *Rhadinaea gaigeae* (CH-CIB 88) from Padre Nuestro, Municipio de Atotonilco el Grande, Hidalgo, Mexico. © Juan Alfonso Hernández-Melo

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First record of *Rhadinella godmani* (Reptilia: Squamata: Dipsadidae) from Nicaragua

Rhadinella godmani (Günther, 1865) is a medium-small-terrestrial dipsadid snake distributed in the highlands of Central America from southeastern Mexico to western Panama, at elevations from 1,200 to 2,650 m (Savage, 2002; Köhler, 2008; Köhler et al., 2013), and apparently is assignable a complex of species occurring in isolated montane localities (Köhler et al., 2013; McCranie, 2015). Köhler (2001), Ruiz and Buitrago (2003), and Sunyer and Köhler (2010) included *R. godmani* (as *Rhadinaea godmani*) in the list of species of probable occurrence in the highlands of Nicaragua, but presently no voucher specimens are available to confirm the presence of this species in the country.

On 26 April 2017, Julio Loza, Luis Gutiérrez, Milton Salazar-Saavedra, José G. Martínez-Fonseca, and Maynor Fernández collected a female *R. godmani* (MHUL 181; Fig. 1) at Cerro Mogotón (13.76000°N, 86.39333°W; datum WGS 84; elev. 1,955 m), Reserva Natural Cordillera de Dipilto-Jalapa, Municipio de San Fernando, Departamento de Nueva Segovia, Nicaragua. The snake was found active at 1305 h, on leaf-litter in undisturbed Lower Montane Moist Forest (Holdridge 1967; Savage 2002). MHUL 181 was collected at a distance of ca. 190 m from where a specimen of *Cerrophidion wilsoni* (MHUL 180) was encountered, which also constitutes a new country record for Nicaragua (Fernández et al., *This Issue*); see this publication for a general description of the habitat and photographs of the collecting area.

In describing the characteristics of the snake, our definitions of scale counts and morphological features, as well as the dichotomous keys, follow Myers (1974), McCranie and Wilson (1992), Köhler (2008), and McCranie (2011). For the color codes, we used Köhler (2012). The description of MHUL 181 is as follows: female; total length 300 mm; tail length 75 mm, comprising 25% of total; head length 8.5 mm; head width 6.3 mm, barely distinct from neck; pupil round; 1 supraocular entering orbit and contacting preocular and upper postocular; preocular 1; postoculars 2; loreal single, contacting 2nd and 3rd supralabials; left internasal fused with left prefrontal; supralabials 8; infralabials 9, with first pair in contact medially; temporals 1+2; dorsal scales smooth in 21-21-21 rows; ventrals 158; anal plate (cloacal scute) divided; and 78 subcaudals, all are paired except for numbers 4, 5, and 51–54, which are single. The color pattern in life of MHUL 181 is as follows: Five distinct and uninterrupted Dark Neutral Grey (299) longitudinal stripes along entire body colored with irregular Trogon Yellow (81) spots; lateral longitudinal stripes (all of row 5 with portions of rows 4 and 6) wider than dorsal (one row wide), which is wider than dorsolaterals (small adjacent portions of rows 8 and 9); Light Pratt's Roufous (71) dorsal surface of body, which includes the dorsal area containing both thin dorsolateral stripes and embraces seven median dorsal scale rows at midbody and five scale rows anteriorly and posteriorly; Salmon (251) lateral surface of body, which includes the area between lateral and dorsolateral longitudinal stripes until venter; uniform Light Orange Yellow (77) venter, with Light Chrome Orange (76) around area in contact with adjacent dorsal rows; Raw Umber (23) dorsal portion of head, with irregular shadings of Dark Neutral Grey (299) and two small, closely situated parietal Cream Color (12) spots; isolated pale tan spots around the neck in area where lateral longitudinal stripe joins head, resembling a light collar interrupted by the dark vertebral and paravertebral stripes; Pale Horn Color (11) ventral portion of head, transitioning to Light Orange Yellow (77) near the first ventral, and with Burnt Umber (48) blotches near mental and upper portion of infralabials; and two distinct longitudinal light stripes on lateral portion of head, which are concealed by Burnt Umber (48): a Pale Buff (1) stripe from lower postocular and upper posterior corner of 5th supralabial to lower anterior corner of 8th supralabial, and a Light Buff (2) stripe from lower nasals and upper portion of 1st supralabial to 4th supralabial, and fading on lower portion of 5th and 6th supralabials.

MHUL 181 represents the first record of *R. godmani* from Nicaragua, with a range extension of ca. 55 km SE from its closest reported locality in Honduras (McCranie and Wilson, 1992; McCranie, 2011). In addition, this specimen represents the highest elevation for any herpetofaunal species recorded in Nicaragua, with an extension of 153 m from the previous record for *Norops wermuthi* (Sunyer et al., 2013).

Fig. 1. A female *Rhadinella godmani* (above = dorsal view; below left = detail of head; and below right = ventral view of portion of venter and tail) from Cerro Mogotón, Departamento de Nueva Segovia, Nicaragua. © José Gabriel Martínez-Fonseca

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***Tropidodipsas sartorii* Cope, 1863.** MEXICO: HIDALGO: Municipio de Atotonilco el Grande, Santa María Amajac (20.319767°N, -98.735013°W; WGS 84); elev. 1,706 m; 15 March 2016; Juan Alfonso Hernández-Melo. A photo voucher (CH-CIB 87; Fig. 1) of the snake was 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 record for the municipality, with the closest known locality ca. 18.38 km to the SW (airline distance) near Acalome, Municipio de Metztitlán, Hidalgo (Fernández-Badillo et al., 2016). The snake was found dead on a road near the Río Amajac.

Fig 1. A *Tropidodipsas sartorii* (CH-CIB 87) found dead at Santa María Amajac, Municipio de Atotonilco el Grande, Hidalgo, Mexico. © Juan Alfonso Hernández-Melo

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***Xenodon angustirostris* (Peters, 1864).** NICARAGUA: CHONTALES: Municipio de Santo Domingo, Macizos de Peñas Blancas (12.27387°N, 85.06373°W; WGS 84); elev. 670 m; 8 January 2014; Allan Antonio Gutiérrez Rodríguez, Luis Arauz, Yaritza Ortiz, and Juan Ali Espinoza. A photo voucher of this individual, which measured 46 cm in total length, is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8877; Fig. 1.). The snake, which displayed particularly aggressive behavior, was found in a pasture at 0920 h, in an area consisting of Tropical Moist Forest (Holdridge, 1967; Savage, 2002).

This locality represents a new departmental record. In Nicaragua, this species has been recorded (as *X. rhabdocephalus*) at elevations from 30 to 1,200 m, in the following departments: Atlántico Norte, Atlántico Sur, Boaco, Jinotega, Matagalpa, and Río San Juan (Gaige et al., 1937; Campbell and Howell, 1965; Köhler, 2001; Sunyer and Köhler, 2010; Sunyer et al., 2014; HerpetoNicas, 2015). Additionally, Campbell and Howell (1965) recorded this species from a locality in Nicaraguan territory, but since 1960 this area has been regarded as in Honduras: "Arenal, 25 Km E of Jalapa, Departamento de Nueva Segovia, Nicaragua", now "Arenales, Departamento El Paraíso, Honduras" (Campbell and Howell, 1965; Köhler, 2001).

Fig. 1. A *Xenodon angustirostris* (UTADC-8877 from Macizos de Peñas Blancas, Santo Domingo, Departamento de Chontales, Nicaragua. © Allan Antonio Gutiérrez Rodríguez

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Family Typhlopidae

***Indotyphlops braminus* (Daudin, 1803).** MEXICO: YUCATÁN: Municipio de Conkal, Instituto Tecnológico de Conkal (21°4'46.51"N, 89°29'59.93"W; WGS 84; elev. 11 m); 17 June 2011; Javier A. Ortiz-Medina. An individual of *Indotyphlops braminus* (Fig.1) was found in the institute's botanical garden at 1300 h. In subsequent years, several more individuals of this exotic snake have been found at the same locality. A photograph of the snake is deposited in the University of Texas at El Paso Biodiversity Digital Collection (photo voucher UTEP G-2017.15). This voucher represents the second published record of this species for the state of Yucatán and a new municipality record, located ca. 12 km to the NE (airline distance) from the first state record, in Municipio de Mérida (Paradiz-Domínguez, 2016).

Fig. 1. An *Indotyphlops braminus* (UTEP G-2017.15) from Instituto Tecnológico de Conkal, Municipio de Conkal, Yucatán, Mexico. © Javier A. Ortiz-Medina

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First verified record of *Cerrophidion wilsoni* (Reptilia: Squamata: Viperidae) from Nicaragua

Cerrophidion Campbell and Lamar, 1992, is a genus of small venomous pitvipers distributed in the highlands of Central America, from southeastern Mexico to western Panama, with Nicaragua and Belize the only two countries in this region where this genus is not known to occur (Köhler, 2008). Currently, five species in this genus are recognized (Wallach et al., 2014). Two of these species occur relatively close to Nicaragua: *C. sasai* in the highlands of Costa Rica and western Panama, and *C. wilsoni* in the highlands of Honduras and El Salvador, with the latter species expected to be found in adjacent Guatemala and Nicaragua at elevations above 1,220 m (Jadin et al., 2012). These

two species formerly were referred to as *C. godmani*, a taxon now restricted in distribution to southeastern Mexico and Guatemala (Jadin et al., 2012).

In Nicaragua, vipers of the genus *Cerrophidion* have been recorded by Villa (1962, 1983, 1984), Peters and Orejas-Miranda (1970), Villa et al. (1988), Ruiz (1996), and Ruiz and Buitrago (2003) as *Bothrops godmani*, Campbell and Lamar (1989) and Campbell and Solórzano (1992) as *Porthidium godmani*, and Campbell and Lamar (1992, 2004) as *Cerrophidion godmani*. All of the Nicaraguan records were based on specimens examined by Villa (1962, 1984), who did not provide information on voucher specimens or photographs, from three Nicaraguan localities: Matagalpa, Ocotal, and Las Manos. Matagalpa is the name of a Nicaraguan department, as well as that of department's largest city. The city of Matagalpa lies at an elevation of ca. 700 m, but suitable elevations for the occurrence of *Cerrophidion* are found within the department. Both Ocotal (elev. ca. 600 m) and Las Manos (elev. ca. 1,200 m) are towns in the department of Nueva Segovia, which are located about 20 km apart. Both of these towns are situated in the Cordillera Dipilto-Jalapa, the northernmost of all the Nicaraguan mountain ranges, which reaches maximum elevation at Cerro Mogotón (2,107 m), Nicaragua's highest peak.

In addition to these localities, Villa (1962, 1984), in the distribution maps of Nicaraguan *Cerrophidion*, included an additional locality in the eastern portion of the northern mountains (along the border of the departments of Jinotega and Atlántico Norte), without providing additional information; subsequently, this locality has been replicated in other maps (e.g., Campbell and Lamar, 2004). We are unaware if this particular locality was a printing error in Villa's distribution maps, or if it was based on a specimen examined by the author but not mentioned in the text. Because of the relatively high elevation of isolated mountains in the general area (ca. 1,750 m) and their close proximity to Honduras, from where this genus is known to occur, this unknown locality potentially could include *Cerrophidion*.

Despite the above-mentioned records and Villa's (1962: 46) report of a Nicaraguan *Cerrophidion* having bitten his cousin on a finger, no conclusive evidence exists for the presence of this genus in Nicaragua, since voucher specimens or photographs of *Cerrophidion* are not available from the country. For this reason, Köhler (2001, 2008), Jadin (2010), and Sunyer and Köhler (2010), as *C. godmani*, and Jadin et al. (2012), Sunyer (2014, 2016), Sunyer et al. (2014), and HerpetoNicas (2015), as *C. wilsoni*, did not include this genus in their respective checklists of Nicaraguan reptiles, and included *C. wilsoni* in the list of species of probable occurrence in the highlands of northern Nicaragua. Furthermore, Jadin et al. (2012) commented on the high probability that *C. wilsoni* occurs in the area of Cerro Mogotón due to its proximity to Honduras (i.e., where this species has been recorded), high elevation, historical sampling limitations due to the presence of unremoved landmines left over from Nicaragua's civil war during the 1980's, which only recently were removed (2005–2009), and consequently, pristine habitat conditions.

On 28 April 2017, Maynor Fernández, José G. Martínez-Fonseca, Milton Salazar-Saavedra, Luis Gutiérrez, and Julio Loza collected a female *Cerrophidion wilsoni* (MHUL 180; Fig. 1) at Cerro Mogotón (13.76056°N, 86.39500°W; datum WGS 84; elev. 1,950 m), Reserva Natural Cordillera de Dipilto-Jalapa, Municipio de San Fernando, Departamento de Nueva Segovia, Nicaragua. The snake was found during the day (1025 h) while active on leaf-litter in undisturbed Lower Montane Moist Forest (Holdridge 1967; Savage 2002). The area consists of pristine broadleaf forest (ca. 10 m tall) with low solar penetration, high humidity, and an abundance of epiphytes and mosses on the tree trunks (Fig. 2). The soil is rich in organic material, with plenty of leaf-litter, and a relatively seldom used and refurbished trail extends to the summit. Although the peak of Cerro Mogotón is located along the international border between Honduras and Nicaragua, our collecting site is located a few meters from the border on the Nicaraguan-protected southern slope.

In describing the characteristics of the snake, our definitions of scale counts and morphological features follow Campbell and Lamar (2004) and Jadin et al. (2012), and the bilateral characters are reported as right/left. We used Köhler (2012) for the color codes. The description of MHUL 180 is as follows: female; total length 380 mm; tail length 35 mm, comprising 9.2% of total; head length 21.7 mm; and head width 12.6 mm. Scales keeled; dorsal scale rows 21-21-17; large median frontal scale present; supralabials 8/9; infralabials 11/11; chin shields contacting first four pairs of infralabials; three pairs of gulars between chin shields and first preventral; preventrals 3; ventrals 144; cloacal scute undivided; 28 undivided subcaudals; and tail spine as long as preceding three subcaudals. The color pattern in life of MHUL 180 is as follows: dorsal ground color Tawny Olive (17) and Drab (19) with three body rows, one dorsal and two laterals, of Cinnamon Brown (43) sometimes bordered with Jet Black (300); dorsal

blotches elongated anteriorly and forming a zig-zag in the middle and posterior portions of body; dorsolateral interspaces between dorsal and lateral blotches paler than adjacent ground color; and lateral blotches absent on tail. Ventral ground color of anterior 1/6 of body Color Clay (20) with Tawny Olive (17) spots, demarcated with Jet Black (300) and gradually turning posteriorly to irregular patterns of Dark Neutral Grey (299) and Pale Neutral Grey (296); top of head Buff (15) with Antique Brown (24) broken stripes concealing two parietal dark spots; lateral head Light Flesh Color (250); postocular stripe Jet Black (300) and Burnt Umber (48) extending from posterior edge of eye to past angle of jaw, coalescing with first lateral blotch on neck on the left side, and without coalescing on the right side; postocular stripe with a conspicuous narrow Light Buff (2) border ventrally; and ventral head Clay Color (20) with Pale Pinkish Buff (3) around gular area.

MHUL 180 represents the first voucher specimen and photographs (Fig. 1) of *C. wilsoni* for Nicaragua and the southernmost record for this species, with a range extension of ca. 85 km SE from its closest reported locality in Honduras (Jadin et al., 2012). In addition, this specimen represents the second highest elevation for any herpetofaunal species recorded in Nicaragua (see Loza et al., *This Issue*).

Fig. 1. A female *Cerrophidion wilsoni* (left = dorsal view, and right = detail of head) from Cerro Mogotón, Departamento de Nueva Segovia, Nicaragua. © José Gabriel Martínez-Fonseca

Fig. 2. Overview (left) and close-up (right) of the habitat of *Cerrophidion wilsoni* at Cerro Mogotón, Departmento de Nueva Segovia, Nicaragua. © José Gabriel Martínez-Fonseca

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***Crotalus intermedius* Troschel, 1865.** MEXICO: HIDALGO: Municipio de Huasca de Ocampo, Los Reyes Tepezala (20.167217°N, -98.552817°W; WGS 84); elev. 2,202 m; 12 March 2017; Arnold Ibarra-Bautista. A photo voucher (CH-CIB 90; 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. 8.7 km to the S (airline distance) in the vicinity of Ejido Sierra de las Navajas, Municipio de Singuilucan, Hidalgo (Fernández-Badillo et al., 2016; CH-CIB 4553).

The snake was found at 1150 h, resting under rocks after a rain in undisturbed pine-oak forest, on a hillside with a slope of 48.2°. The snake was recorded as a juvenile, based on Armstrong and Murphy (1979); it measured 170.2 mm in snout–vent lenght, 30 mm in tail length, and had a body mass of 27 g. The snake was photographed, measured and released where it was found.

Fig 1. A juvenile *Crotalus intermedius* (CH-CIB 90) from Los Reyes Tepezala, Municipio de Huasca de Ocampo, Hidalgo, Mexico. © Gustavo A. Rivera-Milanés

Acknowledgments.—A special thanks goes to Sacarias Hernández-Moreno and Ángel Domitilo Lucas-Moreno for their assistance in the field, and for serving as our guides. We also thank Gustavo A. Rivera-Milanés for photographing the snake, and 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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Reptilia: Testudines

First report of *Terrapene mexicana* (Testudines: Emydidae) from the state of Nuevo León, Mexico

The Mexican Box Turtle, *Terrapene mexicana*, is one of five species in its genus found in Mexico (Legler and Vogt, 2013). This species has been recorded in the coastal plain and associated piedmont (Huasteca) of the Atlantic versant of the country, in the states of Tamaulipas, San Luis Potosí, and Veracruz, and has been hypothesized to occur in adjacent Nuevo León (Legler and Vogt, 2013). A recent review of the herpetofauna of Nuevo León (Névarez-de los Reyes et al., 2016) did not include *T. mexicana* in the list of species in the state. Herein we report a specimen of *T. mexicana* from Nuevo León, and provide comments on the distribution of this species in northeastern Mexico.

***Terrapene mexicana* (Gray 1849).** MEXICO: NUEVO LEÓN: Municipio de Monterrey: 8 km S of Monterrey (25.596311°, -100.261125°); elev. 585 m; 31 June 1949; W. L. Burger. The specimen (UIMNH 9994; Fig. 1A, B), an adult female, represents the first record of *T. mexicana* from the state of Nuevo León, and extends the known distribution 228 km to the NNW of the nearest record at Padilla, Tamaulipas (Legler and Vogt, 2013). While it is unclear exactly where 8 km S of Monterrey would be because of the expansion of the metropolitan area, our analysis of aerial photographs from the 1950s suggests that the southern extension of Monterrey was at or very near the intersections of Highway 40 and Highway 54. The Río La Silla crosses the highway 8.0 km S of this junction, and falls at the locality we indicate herein. This area is the most tropical and most mesic section of the otherwise relatively dry metropolitan area of Monterrey.

A second record from Nuevo León, UIMNH 33172, was collected in September of 1940 from "South Nuevo León" by Edward H. Taylor (Fig. 2A, B). Unfortunately, more precise collection data are not available for this specimen; however, Taylor collected other material about the same time from the vicinity of Linares. This second record supports the validity of Monterrey record, and confirms that *T. mexicana* should be considered a member of the herpetofauna of Nuevo León.

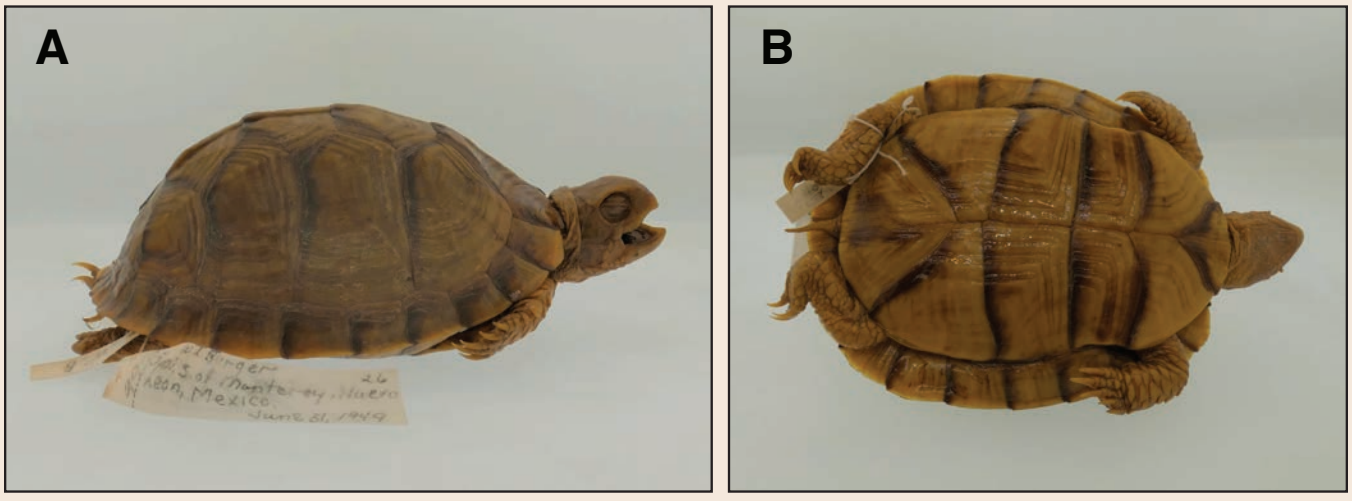

Fig. 1. (A) Lateral and (B) ventral views of UIMNH 9994 from 8 km S of Monterrey, Nuevo León, Mexico.

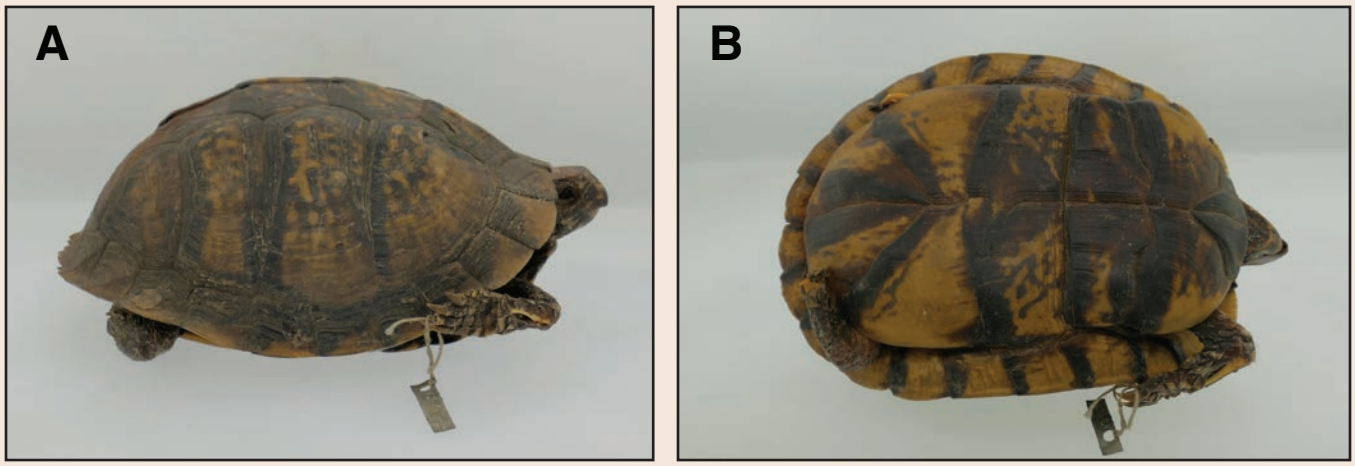

Fig. 2. (A) Lateral and (B) ventral views of UIMNH 33172 from "South of Nuevo León," Mexico. © Daniel B. Wylie

Acknowledgments.—We thank the late W. Leslie Burger for his extraordinary field collecting activities and for his insurmountable contributions to the University of Illinois Museum of Natural History Collection. We also are grateful to Jacobo Reyes-Velasco for verifying the identification of the specimen.

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Vulcan's Slender Caecilian, *Caecilia volcani*, in Costa Rica

During the summer of 1966 Edward H. Taylor, at the age of 77, visited Panama to search for caecilians. Accompanied by Charles Myers, Edward Taylor traveled to the region of El Valle de Antón, located within a large, ancient volcanic crater. During their explorations in this region, Taylor and Myers discovered and collected 10 individuals of a slender caecilian in a soft muddy bank where a swampy area drained into a small stream. Edward Taylor went on to describe the specimens in this series as *Caecilia volcani* Taylor, 1969, named for the Roman god of fire and of smiths, Vulcan (Day, 2007).

Subsequent to the Taylor and Myers collection in El Valle de Antón, *C. volcani* has been collected at additional sites in western Panama, i.e., in La Fortuna (Wake et al., 2005), the vicinity of El Cope (Crawford et al., 2010), and Santa Fe (Köhler, 2011). *Caecilia volcani* currently is recognized as a species endemic to Panama.

The existence of a slender caecilian, often with a pale head, has been known from the Caribbean versant of Costa Rica for at least two decades, but the identification of this form unfortunately has been confusing, as this taxon erroneously has been referred to as *Dermophis parviceps* (Leenders, 2001: plate 1; Savage, 2002: plate 21; Kubicki, 2004; Köhler, 2011: fig. 20; Leenders, 2016: 27–28) despite the obvious morphological characters that disagree with the identification of this species (Dunn, 1924), the genus *Dermophis*, or even the family Dermophiidae (Wilkinson et al., 2011).

We performed a review of the phenotypic characteristics and an analysis of the 16S rRNA (16S) and cytochrome *b* (cyt *b*) mitochondrial genes of a specimen of this dubious caecilian (CRARC 0272), which was collected by BK in the Costa Rican Amphibian Research Center's Guayacán Rainforest Reserve. The tissue samples of CRARC 0272 were sequenced for a fragment of the 16S rRNA (16S) and cytochrome *b* (cyt *b*) mitochondrial genes using published primers and protocols (Kubicki and Arias, 2016; Kubicki, 2016). We compared our sample of CRARC 0272 with all the 16S and cyt *b* sequences available on GenBank for members of the genera *Caecilia* and *Dermophis* (Fig. 7). The individual alignments by gene were performed using the MUSCLE 3.7 software (Edgar, 2004) with default parameters, and trimmed to the point where a majority of the taxa had sequence data. We partitioned the sequence data by gene, and further partitioned cyt *b* by codon position. We used PartitionFinder v1.1.1 (Lanfear et al., 2012) and the Bayesian Information Criterion (BIC) to select an appropriate model of the DNA sequence evolution. The following substitution models were selected: GTR+G for 16S and for cyt *b* codon position 2, HKY+G for cyt *b* codon position 1, and HKY+I for cyt *b* codon position 3. The analyses were performed using both the maximum likelihood (ML) and Bayesian analyses. The ML analysis was performed using RAxML 8.1.11 (Stamatakis, 2014) and run on the CIPRES portal (Miller et al., 2010), including 1,000 bootstrap replicates to evaluate the nodal support. The Bayesian phylogenetic analyses were performed using MrBayes 3.2.2 (Ronquist et al., 2012). Two separate analyses were run, each consisting of 50 million generations, sampled every 1,000 generations, and four chains with default heating parameters. We examined a time-series plot of the likelihood scores of the cold chain to check stationarity using Tracer 1.6 software (Rambaut et al., 2014). We discarded the first 25% of the trees as burn-in, and used the remaining trees to estimate the consensus tree along with the posterior probabilities for each node and each parameter.

The resulting data matrix had a total sequence length of 1,336 bp, including gaps; 552 bp for 16S, and 784 for cyt *b.* The phylogenies inferred using ML and BA were concordant in supporting the tree shown in Fig. 7. The phylogeny shows CRARC 0272 to be conspecific with *Caecilia volcani,* confirming the presence of this taxon in Costa Rica. The discovery of *C. volcani* in Costa Rica results in a new country record for this species, which previously was considered endemic to Panama (Solís et al., 2008; AmphibiaWeb, 2017; Frost, 2017), and thus the total known diversity of amphibians in Costa Rica is 206 species (AmphibiaWeb, 2017).

The specimen of *C. volcani* used in this study (CRARC 0272; Fig. 1) strongly agrees with the diagnostic characters provided for this taxon by Taylor (1969: figs. 1, 2). *Caecilia volcani* (including CRARC 272) can be distinguished from *Dermophis parviceps* by the following characterstics (contrasting characteristics for *D. parviceps* are

listed second): in *C. volcani* a chemosensory tentacle is positioned directly below the nostril (Fig. 2; Taylor, 1969: fig. 2) vs. sensory tentacle positioned about halfway between the eye and nostril (Fig. 3); grooves between the primary folds incomplete along the majority of the dorsum (Figs. 1, 6; Taylor, 1969: figs. 1, 2) vs. grooves between the primary folds complete, at least along the anterior dorsum (Fig. 4); and a pair of inner mandibular or splenial teeth is present (Fig. 5; Taylor, 1969) vs. inner mandibular teeth absent in the genus *Dermophis* (Wilkinson et al., 2011).

Over the last 15 years, *C. volcani* has been encountered on numerous occasions in the C.R.A.R.C.'s Guayacán Rainforest Reserve, most often while digging in muddy substrates or swampy soils. This species has been found in a variety of habitats, ranging from highly disturbed open areas, such as a yard, to mature secondary forest. The type series of *C. volcani* also was found in a muddy substrate (Taylor, 1969).

Over the years a minor but noteworthy level of phenotypic variation has been observed among the different individuals of *C. volcani* encountered in the reserve; the longest individual measured 430 mm in total length (measurement from a live individual), but most individuals encountered measured between 250 and 350 mm (B. Kubicki, pers. observ.). Additionally, a moderate level of chromatic variation also has been observed among different individuals of *C. volcani*, of which the most frequent chromatotype is a solid purple body with pale pinkish-purple coloration on the head (Fig. 6A). A nearly uniform coloration between the head and body is present in some individuals (Fig. 6C), but occasionally some with a mottled pale pink and purple coloration have been observed (Fig. 6B).

Following the confirmation of *C. volcani* within the C.R.A.R.C.'s Guayacán Rainforest Reserve, in addition to the photographic evidence presented in Leenders (2001: plate 1) and Savage (2002: plate 21), in which the captions state that the images are from a specimen(s) photographed at Rara Avis, a private biological reserve located near Horquetas on the northeastern slopes of Volcán Barva, the distribution of this taxon now is known to extend into the foothills of the central and northern Caribbean versant of Costa Rica.

Fig. 1. Different aspects of the anterior and posterior portions of a specimen of *Caecilia volcani* (CRARC 0272) collected in the yard of the Costa Rican Amphibian Research Center's Guayacán Rainforest Reserve, Guayacán de Siquirres, Provincia de Limón, Costa Rica. © Brian Kubicki

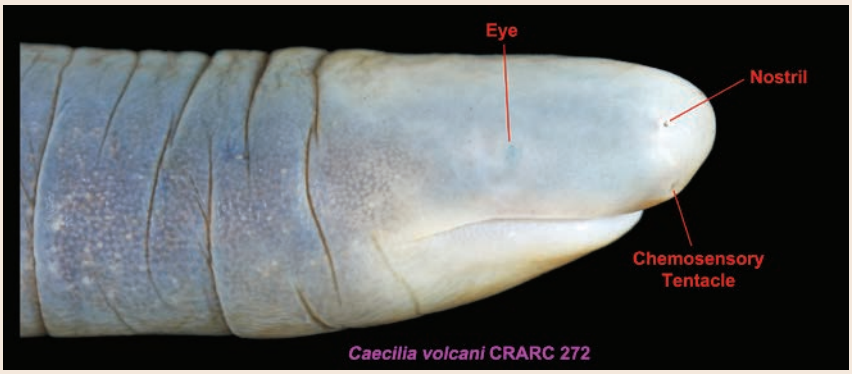

Fig. 2. View of the spatial relationships of the eye, nostril, and chemosensory tentacle on a specimen of *Caecilia volcani* (CRARC 0272) from Guayacán de Siquirres, Provincia de Limón, Costa Rica. © Brian Kubicki

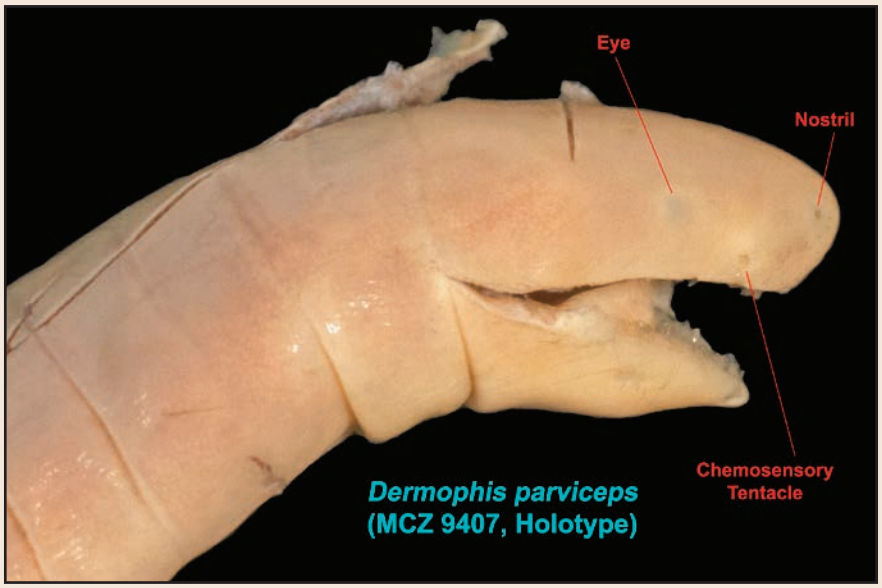

Fig. 3. View of the spatial relationships of the eye, nostril, and chemosensory tentacle on the holotype of *Dermophis parviceps* (MCZ 9407). © Joe Martinez (courtesy of the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, United States)

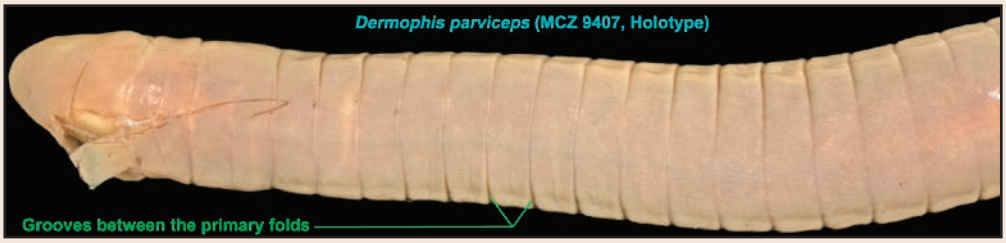

Fig. 4. View of the complete grooves between the primary folds on the dorsum of the holotype of *Dermophis parviceps* (MCZ 9407). © Joe Martinez (courtesy of the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, United States)

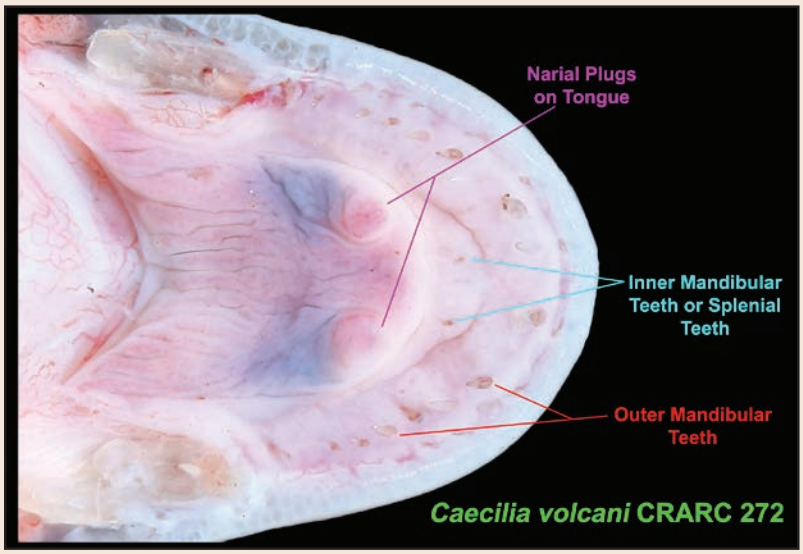

Fig. 5. View of the presence and position of the two inner mandibular teeth on the specimen of *Caecilia volcani* (CRARC 0272) from Guayacán de Siquirres, Provincia de Limón, Costa Rica. © Brian Kubicki

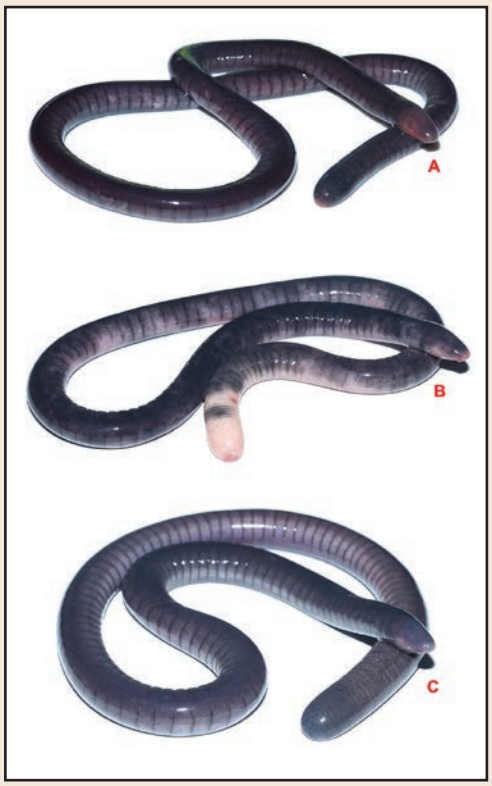

Fig. 6. Examples of chromatic variation in the head and body of three *Caecilia volcani* found at the Costa Rican Amphibian Research Center's Guayacán Rainforest Reserve, Guayacán de Siquirres, Provincia de Limón, Costa Rica. (A) = CRARC 0272; (B) and (C) = photographs of individuals released after the images were taken.

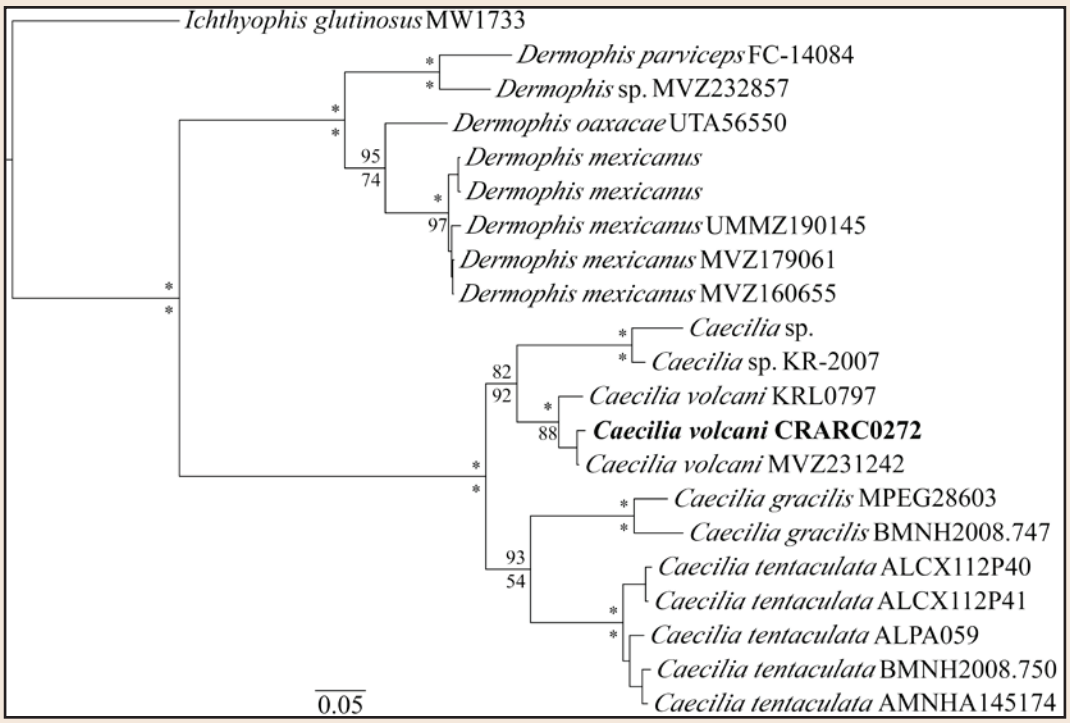

Fig. 7. Bayesian phylogenetic inference of the relationship of the Costa Rican specimen of *Caecilia volcani* (CRARC 0272) among members of the genera *Dermophis* and *Caecilia* for which 16S and cyt *b* mitochondrial DNA genes sequences are available on GenBank. Bayesian posterior probabilities (multiplied by 100) are shown above the branch; maximum likelihood bootstrap values from the RAxML analysis are shown below the branches. The scale bar refers to the estimated substitutions per site. The support values of any node within the species are not shown. The asterisks represent a support of 100.

Acknowledgments.—We are grateful to the Costa Rican Ministerio de Ambiente y Energía (MINAE) and the Comisión Nacional para la Gestión de la Biodiversidad (CONAGEBIO) for providing BK with the corresponding scientific collecting permit (SINAC-SE-CUS-PI-R-058-2016) and permission to realize the molecular studies (R-028-2016-OT-CONAGEBIO). We thank Louis W. Porras for suggestions that improved the manuscript, and James Hanken, José Rosado, and Joseph Martinez of the Museum of Comparative Zoology, Harvard University, for taking, sharing, and allowing use of the images of the holotype of *Dermophis parviceps* MCZ 9407 included herein.

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Distribution and natural history notes on *Norops bicaorum* (Squamata: Dactyloidae) endemic to Isla de Utila, Honduras

Norops bicaorum Köhler, 1996, is an understudied species of anole assigned to the *Norops lemurinus* species subgroup (Köhler and McCranie, 2001; Nicholson et al., 2012). This species is endemic to Isla de Utila, in the Honduran department of Islas de la Bahía, which is the westernmost of the three major Bay Islands and part of the Cayos Cochinos archipelago (McCranie et al., 2005). Currently, *N. bicaorum* is known only from Lowland Moist Forest at elevations from sea level to 20 m on the eastern portion of the island (Wilson and Townsend, 2006; McCranie and Köhler, 2015). Despite its restricted distribution, the conservation status of *N. bicaorum* has not been assessed by IUCN (www.redlist.org; accessed 15 April 2017); Johnson et al. (2015), however, calculated its EVS (Environmental Vulnerability Score) as 17, placing it in the middle portion of the high vulnerability category. Herein we document an expansion in the distribution of this species, and document previously unreported aspects of its natural history. All geographic coordinates were recorded in datum WGS 84.

Distribution

In contrast to information reported in McCranie and Kohler (2015), we found individuals of *Norops bicaorum* to occur at a slightly higher elevation, and to inhabit fragmented patches of palm and tropical broad-leaf forest in an area known as Pumpkin Hill (16.12003°N, -86. 88223°W). During repeated visual encounter surveys at Pumpkin Hill from April to June of 2016, we observed > 30 different individuals of *N. bicaorum* along a 200 m transect, suggesting that a large and dynamic population occurs in this area. We recorded a maximum elevation for *N. bicaorum* as 74 m, an increase of 54 m from that reported by McCranie and Köhler (2015).

We conducted preliminary surveys at several locations across Isla de Utila, including at Alijah Channel (16.07966°N, -86.98255°W), Ironbound (16.121233°N, -86.899123°W), Big Bight (16.0952333°N, -86. 8838333°W), as well as in tropical costal forest (16.071377°N, -86.953372°W) and mature White Mangrove (*Laguncularia racemosa*) habitat on the South Shore (16.081313°N, -86.943696°W). We confirmed the presence of *N. bicaorum* at each of these sites, a significant increase in distribution considering that the species only had been recorded from the eastern portion of the island. Importantly, none of these observations occurred in areas of Red Mangrove (*Rhizophora mangle*), Black Mangrove (*Avicennia germinans*) or swamp forest, the habitat type Fickert and Grüninger (2010) indicated for these localities. Instead, in these areas we found pockets of appropriate costal hardwood/palm forest habitat. These geographical records indicate that the distribution of *N. bicaorum* is greater than previously thought, and likely encompasses most of the suitable and accessible habitat on the island. This distributional expansion is not surprising, considering that the central and western portions of Isla de Utila have not been surveyed extensively for herpetofauna (McCranie and Köhler, 2015).

In addition, we did not locate any *N. bicaorum* during surveys at the Turtle Harbor Wildlife Refuge (16.113160°N, -86. 941234°W), the only terrestrial "protected" habitat zone on Isla de Utila. Whereas individuals might have evaded our search efforts, this area likely is unable to support a large population of *N. bicaorum*, as it consists primarily of wet Neotropical savanna, swamp forest, or Red- and Black Mangrove formations. We believe that additional areas of old-growth broad-leaf/palm forest must be protected for large populations of *N. bicaorum* to persist indefinitely.

Habitat Use

Norops bicaorum has been observed using various habitat types on the island, ranging from preferred old growth broad-leaf/palm forest to secondary forest, coastal vegetation, White Mangrove (*Laguncularia racemosa*), and disturbed areas such as gardens, roadsides, and vegetated agricultural fringes. Their highest population density appears to be in old hardwood/broad-leaf palm forest, where many individuals can be found active throughout the day on the sides of trunks and while they sleep at night. This species, however, is not confined to this "trunk ecomorph," as previously suggested by Nicholson et al. (2012), with regard to the six "ecomorph classes" proposed by Williams (1983). Indeed, many anoles have become specialized to inhabit a narrow ecological niche (Schoener, 1968; Roughgarden, 1974; Schettino et al. 2010), but in the case of Isla de Utila *N. bicaorum* instead is active among

and capable of exploiting many layers within forest structures. This behavior likely has arisen because of the lack of natural sympatric anole competitors. In support, its natural co-inhabitants on the island are the endemic *N. utilensis* (Köhler, 1996), which occurs almost exclusively high in the trees of Red- and Black Mangrove forest formations (Gutsche et al., 2004; Hallmen and Huy, 2012), and *N. sericeus*, which rarely is encountered in forest formations or above heights of 1 m (Henderson and Fitch, 1975). Although our personal observations of both species suggest otherwise (TWB, GL, unpublished), we consider *N. utilensis* and *N. sericeus* to be too small morphologically to act as competitors. With little competition and habitat restrictions, we found *N. bicaorum* inhabiting almost every detectable layer from the ground up to a higher canopy layer, with individuals observed perched and sleeping on palm fronds and branches at a height above 5 m. This capacity to exploit the canopy also is seen in escape responses, and although individuals initially will rely on camouflage, they will dash and spiral up tree trunks to escape predators and avoid capture.

Behavioral Observations

We encountered active *Norops bicaorum* of both sexes most commonly perched at the base of tree trunks, frequently in a downward-facing position at a height of approximately 0.5–2.5 m. Males typically perch in the upper portion of this range, vertically positioned on the trunk with the head held high. Accordingly, we observed individuals with raised nuchal crests and dorsal ridges extending their dewlaps while engaging in territorial displays with neighboring rivals on adjacent tree trunks (Fig. 1A). The crests and ridges only were raised during territorial confrontation with rival males, and female interactions consisted solely of dewlap extensions and head bobbing, before edging gradually closer and repeating this behavior. The dewlap of females is entirely lacking, or rudimentary and considerably smaller in size, and often is paler in coloration than that of males (Fig. 1 B). Unlike what is seen in the displays of other anole species (e.g., Clause and Brown, 2017), *N. bicaorum* does not perform push-ups, but typically remains motionless when displaying, bobbing the head between the dewlap extensions. Additionally, we did not observe physical confrontations between males.

Fig. 1. Dewlap size and coloration of male (A) and female (B) *Norops bicaorum*, an anole endemic to Isla de Utila, Departamanto de Islas de la Bahía, Honduras. © Tom W. Brown

During nocturnal surveys, we observed most *N. bicaorum* sleeping in a downward- facing position on the outer fronds of large fan palms, often < 5 m from their last recorded diurnal location. Their orientation varied depending on the sleeping site, with the choice apparently influenced by the presence of rain or wind. Nonetheless, the flimsy yet sturdy Tique Palm (*Acoelorrhaphe wrightii*) leaves were the most common sleeping sites observed, but we also found individuals using thin branches, hanging vines, broad leaves, palm/tree trunks and barbed wire (Fig. 2). Previous studies on anole sleeping habits suggest that these apparently vulnerable positions can permit the perception of external stimuli, such as the proximity of predators (Singhal et al., 2007).

Norops bicaorum also appeared to exhibit site fidelity, as during a four-week period in April of 2016 we found individuals repeatedly on the same palm tree trunks and in almost identical positions during near daily and nightly visits to the Pumpkin Hill site. In particular, this fidelity was apparent in regard to the choice of sleeping perches. We found numerous individuals using the same sleep site repeatedly, and if not sequentially, they often would use

it in alternation between a few sites. The longest consecutive use of a single sleeping perch was six nights (23–30 April 2016; TWB, pers. observ.). Based on these observations, we assume that individuals of this species inhabit small, localized territories, and exhibit a degree of fidelity to their perch sites. A detailed mark-recapture and tracking study, however, is needed to confirm and further understand these behavioral dynamics.

Fig. 2. Resting or sleeping positions used by *Norops bicaorum*. Perching sites include thin vines and branches, but especially the fronds of the Fan Palm (*Acoelorraphe wrightii*). © Tom W. Brown

Diet

On two consecutive occasions, 10 min apart from each other on 14 May 2016, we saw a female perched at a height of 1.5 m on the trunk of a Tique Palm (*Acoelorrhaphe wrightii)*, running vertically down the trunk and jumping to the ground to catch invertebrate prey; in this case, a jumping spider (*Corythalia* sp.*)* and a cricket (Gryllidae). We also observed other individuals descending to the ground from their trunk perches (0.5–2 m) to chase and capture prey items, including a lacewing (Neuroptera: Chrysopidae), a dragonfly (Odonata: Anisoptera), a cockroach (Blattodea: Blattidae), a caterpillar (Lepidoptera), and a parasitic wasp (Hymenoptera: Ichneumonoidea). In all instances, the initial movement of the invertebrate prey triggered predation, followed by the common approach-pause-strike method (see Moermond, 1981), in which the *N. bicaorum* quickly moved close to the prey item before briefly pausing to orient its head in preparation for the strike. In the majority of observations, after rapidly seizing its prey the individual retreated to the closest trunk base or would reassume its original position while manipulating, chewing, and swallowing. Based on these observations, trunk positioning (alongside male displays) apparently is strongly associated with feeding behavior, and allows individuals to scan the leaf-litter for active invertebrates and ambush them with success. Because of the array of invertebrate prey items captured, *N. bicaorum* likely is highly opportunistic and diverse in its dietary habits.

Reproduction

On 27 February 2017 at approximately 1100 h, we observed a pair of *Norops bicaorum* mating in dry hardwood forest habitat near Ironbound (16. 121233°N, -86. 899123°W). During copulation, the anoles were positioned on a mature vine at a height of 3 m. We continued to observe them for 10 min, and during this time the male used its jaws to grasp the female behind the neck, while holding on to her body with the limbs and tail (Fig. 3). When we returned after 1.5 h, the male was no longer present but the female was resting at a similar height 4 m away from the original position. Although we cannot accurately define the breeding or reproductive season for this species, we found hatchlings and juveniles from March through to September. This observation is consistent with reports in wild-caught captive populations, as Beest and Hartman (2003) documented year-round reproduction, with females depositing a single egg in the terrarium substrate every 15 days (McCranie and Köhler, 2015).

Fig. 3. A pair of *Norops bicaorum* observed copulating on a mature vine. © Matthijs Vandenburg

Threats

Likely snake predators of *Norops bicaorum* include *Leptophis mexicanus*, *Mastigodryas melanolomus*, *Oxybelis aeneus*, and *O. fulgidus,* all of which have been observed at the Pumpkin Hill and Ironbound sites. Another species, *Imatodes cenchoa*, is a nocturnal predator that feeds largely on anoles, and although this species has been reported from the island, we did not observe any individuals during our study. Domestic cats also have been observed catching and eating anoles in rural and urban areas.

A potentially major competitor and threat to the species includes the notoriously invasive anole, *N. sagrei*. Currently, this species only has only been observed in the streets, gardens, and vegetated patches throughout the Utila Town; most notably, a high density is present along the main harbor on the island (likely its point of introduction). To date, no individuals have been observed in Utila's broad-leaf forest habitats, which is fortunate because this species possibly could outcompete *N. bicaorum*. Conversely, as documented in many cases, the population of this invader will not remain confined (Kraus, 2009; Meshaka, 2011; Kamath et al. 2013). Instead, we expect that the population of *N. sagrei* will increase rapidly in synergism with continued deforestation and human related development across the island.

Presently, deforestation is taking place and likely will continue to increase with the pace of development in the areas surrounding Pumpkin Hill, as most of the natural habitat is privately owned and available for purchase. McCranie and Köhler (2015: 276) noted that *N. bicaorum* should be considered as Near Threatened in accordance to IUCN Redlist categories, and appears to be declining in altered habitat, "still remaining common, but seemingly down from its former exceedingly abundant category." This decline almost certainly is the result of disturbance and habitat change caused by the removal of forest habitats. Indefinite development and continuation of such practices eventually will endanger *N. bicaorum* populations across the island.

The documentation of these observations comes at a critical time for the conservation of *N. bicaorum*, and indeed for the herpetofauna of Isla de Utila. Although these observations are preliminary, they highlight the gaps in species-specific knowledge and the importance of further population and behavioral studies. We hope that the information we present will inform and inspire future research on this charismatic endemic and its function within the island's ecosystem.

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First record of the Turniptail Gecko (*Thecadactylus rapicauda* Houttuyn, 1782) in Tabasco, Mexico

Since the last update of the herpetofaunal checklist of Tabasco by Reynoso-Rosales et al. (2005), several new records of reptiles have been reported from the state (Charruau et al., 2014, 2015; Clause et al., 2016; Hernández-Valadez et al., 2016; Barragán-Vázquez et al., 2017; Torres-Pérez and Barragán-Vázquez, 2017). Nonetheless, the diversity of amphibians and reptiles in Tabasco remains poorly known, signifying the need for continued inventories. In particular, fieldwork along the boundaries with Chiapas (Mexico) and Guatemala might increase the number of species in Tabasco, and perhaps in the country. Herein, we document the first record of *Thecadactylus rapicauda* in Tabasco, and present information on its natural history.

Russell and Bauer (2002) noted that *T. rapicauda* has the most extensive range of any naturally distributed lizard in the Western Hemisphere, and one of the widest distributions of any species in the world; however, the southwestern Amazonian population and the one in Saint Maarten in the Lesser Antilles now are considered to constitute different species (Bergmann and Russell, 2007; Köhler and Vesely, 2011). In Mexico *T. rapicauda* been reported from the states of Campeche, Chiapas, Quintana Roo and Yucatán (Lee, 1996; Calderón-Mandujano et al., 2003; Johnson et al., 2015).

In June of 2016 we conducted fieldwork in the protected area Cañón del Usumacinta, near Tenosique, Tabasco, where the Río Usumacinta flows through 200 m-high canyon walls. The vegetation in this area consists of tropical evergreen forest (Fig. 1). Numerous caves in this area are inhabited by a variety of amphibians and reptiles, including *Craugastor alfredi*, *Lepidophyma flavimaculatum*, and *Leptodeira septentrionalis*. In one of these caves we found an individual of *T. rapicauda*, at 0730 h, perched about 2 m from the top of the cave (Fig. 2). Soon after capturing the lizard, we measured its body temperature (*Tb* = 28.7°C), the substrate temperature (*Ts* = 28.2°C) and the air temperature (*Ta* = 27.4°C) with a fast-response digital thermometer, Fluke 51-II (± 0.1°C). Our data were similar to those reported by Vitt and Zani (1997) for what then was considered as *T. rapicauda*, although the western Amazonian populations in that study (Cuyabeno and Rondônia) now are regarded as *T. solimoensis* (Bergmann and Russell, 2007). We made a ventral incision to determine the sex of the specimen and also to examine the stomach contents. The specimen is a male with the following measurements: snout–vent length = 81 mm, tail length = 76 mm. We found the remains of beetle elytra (Coleoptera) in the stomach contents. Finally, we georeferenced the collection point with a GPS Garmin GPSMAP 64s (± 5 m), and conducted a search of records in the portal Global Biodiversity Information Facility (GBIF). The specimen is deposited in the Colección Nacional de Anfibios y Reptiles, of the Instituto de Biología, Universidad Nacional Autónoma de México (CNAR 31555).

The specimen was found on 1 June 2016, at 10 km NW of Tenosique, Municipio de Tenosique, Tabasco, Mexico (17.418537°N, -91.493357°W; datum WGS 84; elev, 70 m), and represents the first record of this species from the state of Tabasco. This record expands the distribution of this species 80.3 km to the N (airline distance) from Yaxchilán, Municipio de Ocosingo, Chiapas (Ferreira-García and Canseco-Márquez, 2006). Additionally, in the GBIF we found two unpublished records that were closer, from the Colección Herpetológica of the Instituto de Historia Natural, Chiapas and at the University of Texas at El Paso. The first came from 2.3 km S of La Cascada, Municipio de Palenque, Chiapas, which extends the distribution 32 km to the W (airline distance) (IHNHERP 701; GBIF, 2017), and the second came from 6.5 km SW of Palenque, Municipio de Palenque, Chiapas, which extends the distribution 57.8 km to the W (airline distance) (UTEP 12254, GBIF, 2017), respectively. We did not examine these two specimens.

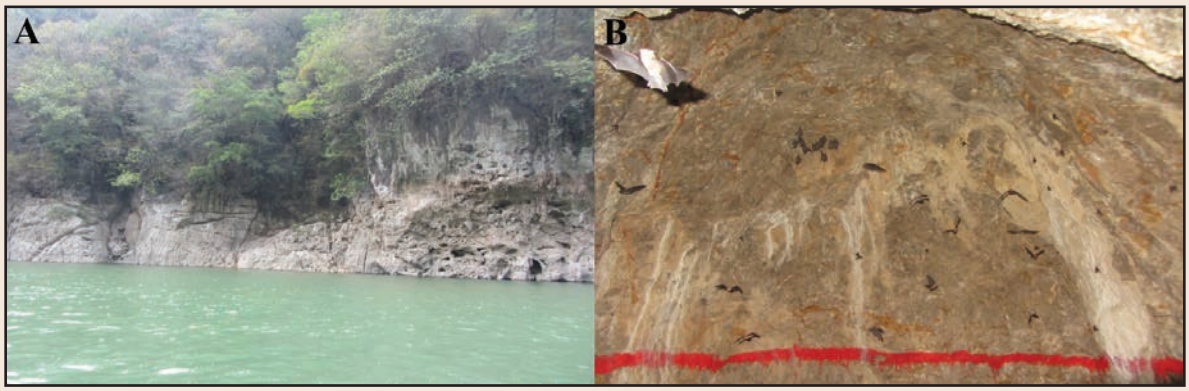

Fig. 1. (A) Cañón del Río Usumacinta, Tenosique, Municipio de Tenosique, Tabasco, Mexico; and (B) a cave along the river where where an individual of *Thecadactylus rapicauda* was found. © Diego M. Arenas-Moreno

Fig. 2. A male *Thecadactylus rapicauda* (CNAR 31555) found in a cave at Cañón del Usumacinta, Tenosique, Municipio de Tenosique, Tabasco, Mexico. © Yennifer Marcela Arellano-Cárcamo

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***Hypsiglena torquata* (Günther, 1860). Geographic distribution and diet**. The Sinaloan Nightsnake, *Hypsiglena torquata* (Dipdasidae) is distributed from Sinaloa southward to Guerrero and Oaxaca, Mexico (Mulcahy, 2008; Mata-Silva et al., 2015), and occurs in a wide variety of habitats at elevations from sea level to approximately 1,619 m (Canseco-Márquez and Gutierrez-Mayén, 2010; Wallach et al., 2014). The diet of some species in the genus *Hypsiglena* has been reported to consist of frogs, salamanders, toads, lizards, lizard eggs, snakes, and rarely insects (Rodríguez-Robles et al., 1999; Setser and Goode, 2004). Palacios-Aguilar et al. (2016) provided a summary of the distribution records of *H. torquata* from Guerrero. Herein we report a new municipality record from Mitlancingo, Municipio de Ahuacotzingo, Guerrero (17°49'59.31"N, 98°58'57.54"W; WGS 84); elev. 682 m; 13 December 2016; Yajaira M. Pantoja Bartolo. The specimen was deposited in the Colección Nacional de Anfibios y Reptiles at the Instituto de Biología, Universidad Nacional Autónoma de México (CNAR 31547). This record extends the previously known distribution in Guerrero by 79.6 km to the NW [airline distance] from the nearest locality at Xonacotla, Municipio de Cocula (Palacios-Aguilar et al., 2016). The snake was found under a rock in an agricultural field that formerly consisted of tropical dry forest. We determined the sex of the specimen as a female by means of a ventral incision to examine the gonads. The specimen measured 170 mm in snout–vent length, and 300 mm in tail length (Fig. 1A). The morphological data are as follows: supralabials 8-8, infralabials 7-7; dorsal scale rows 21-21-18 ventrals 156; and cloacal scute (= anal plate) divided. We examined the stomach contents of snake and found partially digested fragments (fingers, toes and tail remnants; Fig. 1B) of a lizard of the genus *Aspidoscelis*; because of the state of decomposition of the remains, we were unable to determine the species. This information represents the first record of a lizard of the genus *Aspidoscelis* in the diet of *H. torquata*.

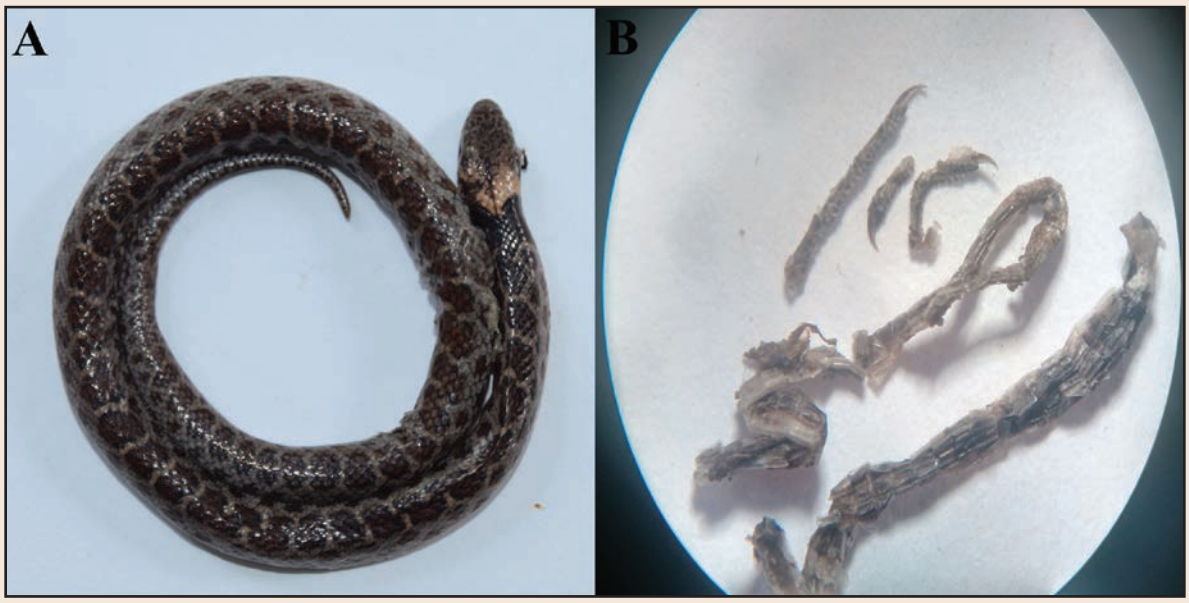

Fig. 1. (A) An adult female *Hypsiglena torquata* (CNAR 31547) from Mitlancingo, Municipio de Ahuacotzingo, Guerrero, Mexico; and (B) the stomach contents retrieved from specimen showing a close-up of the remnants of an *Aspidoscelis* sp.

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The snake *Lampropeltis annulata*, Kennicott, 1861, in Hidalgo, Mexico

The genus *Lampropeltis* (Colubridae) ranges widely in North America, from southern Ontario and southwestern Quebec, Canada, west to southern Washington, in the United States, and southward to Colombia, Ecuador, Peru, and Venezuela in South America (Blaney, 1973). In Mexico, this group of snakes is represented by 12 species (Heimes, 2016), of which three are distributed in the state of Hidalgo: *L. mexicana*, *L. polyzona*, and *L. ruthveni* (Ramírez-Bautista et al. 2010; 2014; Roth-Monzón et al., 2013; Lemos-Espinal and Smith, 2015; Fernández-Badillo et al., 2016; Hansen et al., 2016; Lemos-Espinal and Dixon, 2016; Fernández-Badillo et al., 2017). Based on the known distribution of *L. annulata*, Ruane et al. (2014) suggested that this species likely is found in Hidalgo. Further, Heimes (2016: 84) indicated that *L. annulata* is found in "adjacent areas of northern Querétaro and northwestern Hidalgo," although, the references cited therein do not support its presence in Hidalgo. Consequently, no accurate records are available to confirm the occurrence of *L. annulata* in the state.

During a study conducted in the Reserva de la Biosfera Barranca de Metztitlán (RBBM) from 2010 until the present, four individuals of *L. annulata* were encountered in the municipalities of Eloxochitlán, Metztitlán, and San Agustín Metzquititlán, Hidalgo (Fig.1). The first specimen (CH-CIB 4525: Fig. 2A) was found dead in Venados, along the border between the municipalities of Metztitlán and San Agustín Metzquititlán (20.47404°N; -98.67585°W; WGS 84); elev. 1,365 m; 14 September 2014; Guillermo Sánchez-Martínez. The second (CH-CIB 4861: Fig. 2B)

was found dead in the town of San Juan Altzonzintla, Municipio de Metztitlán (20.602755°N; -98.814588°W; WGS 84); elev. 1,268 m; 10 May 2015; Cristian R. Olvera-Olvera. A third individual (CH-CIB 82; Fig. 2C) was found alive by local residents at Rancho Alegre, Municipio de San Agustín Metzquititlán (20.466646°N; -98.665964°W; WGS 84); elev. 1,338 m; 20 September 2015. This snake was photographed and released where it was found. The fourth specimen (CH-CIB 83, 84; Fig. 2D, E) was found dead on a dirt road in at Chacaya, Municipio de Eloxochitlán (20.726428°N; -98.938821°W; WGS 84) elev. 961 m; 21 May 2016; local resident.

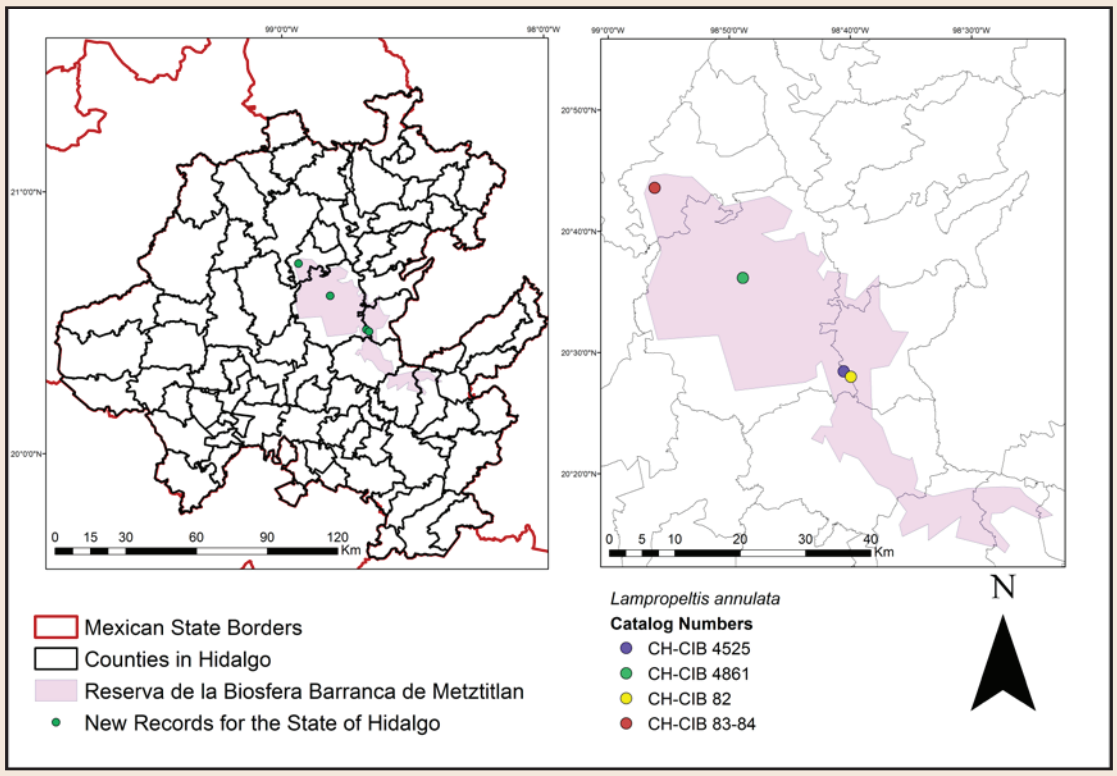

Fig. 1. Map of the records of *Lampropeltis annulata* in Reserva de la Biósfera Barranca de Metztitlan, Hidalgo, Mexico.

All of the above snakes were identified as *L. annulata* based on the morphological characteristics indicated by Williams (1988; 1994), Ruane et al. (2014), and Heimes (2016). *Lampropeltis annulata* exhibits a black head and snout, and the coloration of the body consists of incomplete red rings, which are interrupted by black pigment on the venter (Williams, 1988; Heimes, 2016), in contrast to the other three species of *Lampropeltis* found in Hidalgo (Williams, 1988, 1994; Ruane et al., 2014; Fig. 1E); in addition, the number of ventrals in *L. annulata* ranges from 181 to 207 (Williams, 1988; Heimes, 2016). Conversely, the head of *L. mexicana* (Fig. 3A) is dark gray and contains a pair of orange blotches bordered by black, the dorsal region consists of red bars with black borders (instead of rings), and the ventral coloration is white with black or opaque orange spots (Ramírez-Bautista et al., 2014); the number of ventrals in this species ranges from 190 to 212. The head of *L. ruthveni* (Fig. 3B) is black (Roth-Monzon et al., 2013), similar to that of *L. annulata* (Williams, 1988; Williams, 1994; Ruane et al., 2014; Heimes, 2016), but occasionally contains small white or red markings, and the red rings usually extend across the venter; the ventral scales range from 182 to 196 (Dixon and Lemos-Espinal, 2010; Heimes, 2016). The head of *L. polyzona* (Fig. 3C) is black and contains a white band or spot on the snout that crosses the edge of the prefrontal and internasal scales, the red and pale rings can completely encircle the body, or sometimes are interrupted on the venter by black pigment or black spotting (Williams 1988, 1994; Ruane et al 2014; Heimes, 2016); the ventral scales in this species range from 192 to 235.

Fig. 2. Specimens of *Lampropeltis annulata* collected in the Reserva de la Biósfera Barranca de Metztitlan, Hidalgo, Mexico. (A) Near the border between the municipalities of Metztitlán and San Agustín Metzquititlán; (B) San Juan Altzonzintla, Metztitlán; (C) Rancho Alegre, San Agustín Metzquititlán); (D) Chacaya, Eloxochitlán (dorsal view); and (E) Chacaya, Eloxochitlán (ventral view);).

© Miguel Ángel Flores-Hernández (A, B), Leonardo Fernández Badillo (C), courtesy of local resident (D, E)

The information presented here confirms the assumption by Ruane et al (2014) that *L. annulata* likely occurs in Hidalgo. Our records extend the distribution of *L. annulata* by 92.7 km to the S of the nearest locality, at 1 km SE of Agua Zarca, Landa de Matamoros, Querétaro (1.211667°N; -99.076667°W; WGS 84). The specimen collected at this locality was recorded as *L. triangulum* by Dixon and Lemos-Espinal (2010), but according to Ruane et al. (2014) it corresponds to *L. annulata*.

Our data represent an addition to the list of squamate species reported for RBBM (Vite-Silva et al., 2010; Cruz-Elizalde et al., 2015) and the arid areas of the state of Hidalgo (Fernández-Badillo et al., 2016).

Because of the resemblance of *L. annulata* to the venomous *Micrurus tener*, people in the RBBM often kill individuals of this species. Consequently, environmental education programs are necessary to help people distinguish between venomous and non-venomous species, as well as to recognize the importance of these organisms in the ecosystem. Accordingly, it is necessary to update the management plans of the RBBM to include this species in their conservation strategies. Because *L. annulata* was not considered in a risk category in NOM-059-SEMATAT-2010 (SEMARNAT, 2010), its conservation status remains unknown.

Fig. 3. Images of other species of *Lampropeltis* from the state of Hidalgo, Mexico. (A) *L. mexicana*: Mixquiahuala (CH-CIB 3357; single known specimen from Hidalgo); (B) *L. ruthveni*: Ejido de Mintho, Huichapan; (C) *L. polyzona*: Zacualtipán de Ángeles. © Ferdinand Torres-Ángeles (A), Alfonso Hernández-Melo (B), and Leonardo Fernández-Badillo (C)

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