NATURE NOTES

Amphibia: Caudata

***Aquiloeurycea cephalica* (Cope, 1865). Size and natural history.** *Aquiloeurycea cephalica* is a plethodontid salamander found in the Transmexican Volcanic Belt and the Sierra Madre Oriental in Mexico (Parra-Olea et al., 2005). Its distribution includes the states of Hidalgo, Mexico, Morelos, Puebla, Querétaro, San Luis Potosí, Tamaulipas, Tlaxcala, and Veracruz, as well as the Distrito Federal (Smith and Smith, 1976; Parra-Olea et al., 2005; Fernández et al., 2006; Farr et al., 2009). *Aquiloeurycea cephalica* is polytypic, and according to Parra-Olea et al. (2010) it likely represents a species complex.

On 8 August 2015 at 1539 h, we collected an adult female *A. cephalica* (Fig. 1) in a trail within Parque Ejidal San Nicolás Totolapan, Magdalena Contreras, Distrito Federal, Mexico (19.25175N, 99.248528W; WGS 84; elev. 2,966 m). The salamander was perched on a tussock of dry grass at approximately 15 cm above the ground. The vegetation along the trail was pine-juniper forest. The specimen (MZFC 29986) was deposited in the herpetological collection of the Museo de Zoología "Alfonso L. Herrera," Facultad de Ciencias, Universidad Nacional Autónoma de México, and represents the second largest and most fecund known female of this species (see below).

Fig. 1. Specimen of *Aquiloeurycea cephalica* (MZFC 29986) in life. © Carlos J. Pavón Vázquez

We examined MZFC 29986 morphologically with the aid of a dissecting microscope, and recorded measurements either with a digital caliper or a ruler adapted to the ocular of a dissecting microscope (to the nearest 0.1 mm). We sexed the specimen by dissection. The limb interval equals the number of costal interspaces separating the forelimb and hind limb when adpressed against the body. The snout–vent length (SVL) equals the distance between the tip of the snout and the anterior edge of the vent, and the standard length (SL) equals the distance between the tip of the snout and the posterior edge of the vent. Measurements (in mm, except for the limb interval) and tooth counts of the specimen are as follows: SVL= 57.4; SL = 60.7; tail length = 50.7; axilla–groin distance = 32.6; limb

interval = 2; snout–gular fold distance = 14.8; head width = 8.5; head depth = 4.6; internarial width = 2.5; nostril diameter = 0.2; shoulder width = 6.9; forelimb length = 14.1; hind limb length = 16.7; foot width = 5.3, premaxillary plus maxillary teeth = 80; and vomerine teeth = 27. Upon dissection, we found that the specimen contained 53 vitellogenic follicles (27 in the left ovary and 26 in the right), ranging in diameter from 1 to 2.5 mm.

Several publications state that males of *A. cephalica* are larger than females (e.g., Uribe-Peña et al., 1999; Ramírez Bautista and Arizmendi, 2004). In contrast, Parra-Olea et al. (2010) reported larger sizes for females than males. Ramírez-Bautista et al. (2009) reported the largest specimen of the species, a female collected in 1977 and measuring 62.7 SVL, but we are not aware if the authors measured the SVL or the SL, as these measurements are used here. Either way, the specimen herein described represents the second largest known female of the species. It surpasses the SL of the third largest reported female by 2.9 mm (Parra-Olea et al., 2010), and has an unusually high number of premaxillary plus maxillary teeth (80 vs. 2–11 and 43–70 premaxillary and maxillary teeth, respectively, in previously reported specimens; Ramírez Bautista and Arizmendi, 2004; Parra-Olea et al., 2010), which probably is related to the large size of the specimen. Based on his own observations of *A. cephalica* and reported accounts of other plethodontid species, Bille (1998: 450) stated that, "It seems . . . that teeth are added continuously during ontogeny."

Clutch sizes of 22 to 28 eggs have been reported for *A. cephalica* (Bille, 1998; Ramírez Bautista and Arizmendi, 2004). In contrast, MZFC 29986 contained about twice that number of vitellogenic follicles. The specimen with a clutch size of 22 came from Parque Nacional Lagunas de Zempoala, Morelos, Mexico, at an elevation of 2,850 m, ca. 23 km (straight line) from the collection locality of MZFC 29986. Even though we are not certain if all of the follicles present in MZFC 29986 would have been ovoposited, the number is considerably larger than the 27 vitellogenic follicles present in the largest known specimen of the species (see above; Ramírez-Bautista et al., 2009). More data are needed to assess whether this difference is explainable by intrapopulational variation, local adaptation, body size dependence of the clutch size, or specific level divergence.

Acknowledgments.—Fieldwork was conducted under a collecting permit issued to Uri O. García-Vázquez by the Secretaria de Medio Ambiente y Recursos Naturales (permit number FAUT-0243). We thank Adrián Nieto-Montes de Oca for providing the facilities for examining the specimens and Edmundo Pérez-Ramos for cataloguing material into the MZFC collection.

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Reptilia: Squamata (lizards)

Callisaurus draconides. **Reproduction.** *Callisaurus draconoides* ranges from northwestern Nevada and southeastern California eastward to southwestern New Mexico, in the United States, and in Mexico southward to the tip of Baja California and southern Sinaloa (Stebbins, 2003). Although the reproduction of *C. draconoides* has been well studied in North America (Pianka and Parker, 1972; Tanner and Krogh, 1975; Vitt and Ohmart, 1977; Goldberg, 2013), reproductive information on *C. draconoides* in Mexico consists of reports from Baja California (Asplund, 1967; Fitch, 1970; Grismer, 2002). In this note I report five clutch sizes for *C. draconoides* from Sinaloa, Mexico.

I examined five females of *C. draconoides* collected 20 July 1960 at Mazatlán (23.2200°N, 106.4200°W; WGS 84), Sinaloa, Mexico. The specimens were deposited in the herpetology collection of the Natural History Museum of Los Angeles County (LACM), Los Angeles, California, United States as LACM 94447–94451. Four of the five contained oviductal eggs, and the remaining female (LACM 94447) had five enlarged pre-ovulatory follicles (> 6 mm). The mean clutch size of the five specimens was 3.0 ± 1.2 SD, range = 2–5, which is within the range (2–15 eggs) and time for oviposition (June to August) reported for *C. draconoides* in the United States by Stebbins (2003). Additional monthly samples of *C. draconoides* need to be examined before the reproductive cycle of this species in Sinaloa can be ascertained, and comparisons made with North American populations.

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***Hemidactylus frenatus* Schlegel, 1836 *In* A. M. C. Duméril & Bibron, 1836. Predation attempt.** The Asian House Gecko, *Hemidactylus frenatus*, is native to Asia and the Indo-Pacific region, but rapidly has become a cosmopolitan species through numerous colonization events (Vences et al., 2004). Presently this species has the widest non-native distribution of any member of its genus (Case et al., 1994), and its spread is expected to continue (Rödder et al., 2008). This gecko first was recorded in Nicaragua in the late 1990s at Corinto (Vences et al., 1998), the largest harbor along the Pacific coast, and since then has been recorded in many areas of the country. This species is locally abundant, territorial, and mostly nocturnal, and its rapid spread is associated with human structures and outdoor lights that attract nocturnal insects, as it rarely penetrates forested habitats. A generalist predator *H. frenatus* often forages on a wide variety of food items, including insects, mollusks, spiders, crustaceans, centipedes (Tyler, 1961; Savage, 2002; Jadin et al., 2009), and occasionally geckos (Cole et al., 2005; Díaz-Pérez et al., 2012; Gardner and Jasper, 2012), even conspecifics (Galina-Tesaro, et al., 1999).

On 4 January 2014 at 1730 h, ca. 300 m N of the main boat dock at Boca de Sábalos (11.023°N, 84.282°W; datum WGS 84; elev. 40 m), Municipio de El Castillo, Departamento de Río San Juan, Nicaragua, one of us (BMA) observed an adult male *H. frenatus* chasing an adult male *Gonatodes albogularis*; photo vouchers of this event are deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8617; Fig. 1A, B). The lizards were located at a height of 2.3 m from the ground on a wooden wall in an urban area formerly consisting of Lowland Moist Forest (Holdridge, 1967; Savage, 2002). Following a burst of speed, the *H. frenatus* bit the tail of the *G. albogularis* and detached it from the body, and the *G. albogularis* quickly sought shelter in a crevice on the wooden wall. After swallowing the tail, the *H. frenatus* saw where its victim was hiding and rushed toward it and bit it on the hind limbs and the base of the tail (Fig. 1A), and violently shook the lizard sideways; in response, the *G. albogularis* retaliated by biting the head and flanks of the predator (Fig. 1B). At that point the *G. albogularis* was bleeding profusely from the base of the tail and the hind limbs, from where the skin had been ripped off, when the *H. frenatus* (with no evidence of wounds from the predatory attempt) released it, as it had become startled by the photographer's presence.

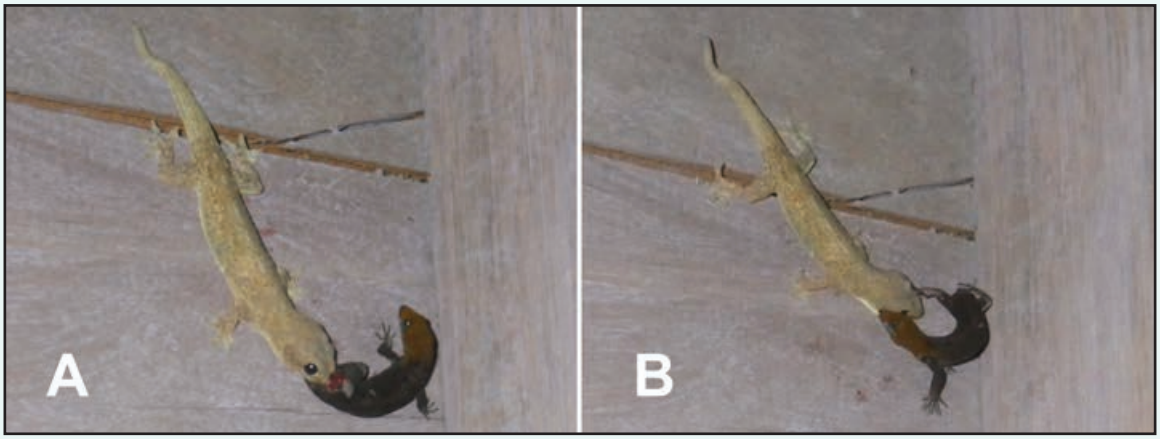

Fig. 1. (A, B) Two photographs showing a predatory event of an adult male *Hemidactylus frenatus* on an adult male *Gonatodes albogularis* at Boca de Sábalos, Departamento de Río San Juan, Nicaragua. © Billy M. Alemán

Hemidactylus frenatus is an internationally significant invasive lizard that has been implicated in the decline, displacement, and extinction of a number of gecko species (Case et al., 1994; Hanley et al., 1998). Little information is available on the impact of invasive species on Nicaragua's native herpetofauna. Three species of lizards have been introduced into Nicaragua (*H. frenatus*, *Lepidodactylus lugubris*, and *Sphaerodactylus argus*; Köhler, 2001, 2008; Sunyer, 2014); the distribution of the latter two species is relatively restricted in the country, whereas that of the former is widespread. Additional studies focusing on the competition and displacement of native geckos such as *G. albogularis*, *Phyllodactylus tuberculosus*, *Sphaerodactylus millepunctatus*, and *Thecadactylus rapicauda* by *H. frenatus* should be conducted. Of these species, we believe *P. tuberculosus* is the most vulnerable (pers. observ.)

To the best of our knowledge, our observation represents the first recorded attempt of predation by an introduced reptile on a native herpetofaunal species in Nicaragua.

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***Phyllodactylus muralis*. Endoparasites.** *Phyllodactylus muralis* is endemic to Oaxaca, Mexico, where it is known to occur in tropical deciduous forest and dry forest at elevations from sea level to 1,300 m (Campbell, 2007). We are not aware of any published records of endoparasites for *P. muralis*, so in this note we establish the initial helminth list for this species.

We examined nine *P. muralis* collected in 1979 (mean snout–vent length = 54.3 mm ± 6.1 SD, range = 44–66 mm) for helminths from the herpetology collection of the Natural History Museum (LACM) of Los Angeles County, California, United States: LACM 130036, 130039, and 130041, collected 13 km WNW of Tehuantepec (16.25665°N, 95.31850°W; WGS 84); and LACM 130043–130045, 130047, 130050, and 130060, collected 26 km N of Cuicátlan (17.78333°N, 96.96667°W).

We made a lateral incision through the body wall and removed the digestive tract, and opened the esophagus, stomach, and small and large intestines longitudinally, and searched for helminths using a dissecting microscope. We cleared nematodes in lactophenol, and placed them on a coverslipped microscope slide. The cestode was regressively stained in hematoxylin, dehydrated, cleared in xylol and mounted in Canada balsam. We studied both using a compound microscope. We found one species of Cestoda (in the small intestine), *Oochoristica parvula* (*n* = 1, prevalence, number infected lizards/number lizards examined × 100 = 1/9, 11%) and two species of Nematoda (both in the large intestine), *Parapharyngodon alvarengai* (*n* = 5, prevalence = 1/9, 11%) and *Spauligodon oxkutzcabiensis* (*n* = 170, prevalence = 67%, mean intensity, mean number infected lizards = 28.3 ± 23.1 SD, range = 3–66). We deposited the voucher helminths in the Harold W. Manter Laboratory (HWML), University of Nebraska, Lincoln, Nebraska, United States as: *Oochoristica parvula* (HWML 101834), *Parapharyngodon alvarengai* (HWML 91961), and *Spauligodon oxkutzcabiensis* (HWML 91962).

Stunkard (1938a) originally described *Oochoristica parvula* from the gecko *Coleonyx elegans* from Yucatan, Mexico, as *O. parva*; the name, however, was preoccupied (Stunkard, 1938b), as previously it was reported in *Sonora semiannulata* collected in New Mexico (Bursey and McAllister, 1996). The measurements of *O. parvula* from *P. muralis* are as follows: 68 proglottids, 20 mm long by 0.56 mm wide, scolex 250 µm, suckers 90 µm, testes number 22–32, 20–28 µm in diameter. These measurements were within the ranges of those provided by Stunkard (1938a). *Parapharyngodon alvarengai* was described from *Mabuya macularia* from Brazil by Freitas (1957). This species is known from *Ameiva ameiva* and *Rhinella icterica* (reported as *Bufo ictericus*) and *Tropidurus hispidus* from Brazil (Padhila and Faria Duarte, 1979; Luque et al., 2005, Galdino et al., 2014), *Anolis (= Norops) nebulosus, Aspidoscelis communis*, *A. motaguae*, *A. sacki*, *Lepidophyma sylvaticum*, *Phyllodactylus lanei*, *Sceloporus nelsoni*, *Urosaurus auriculatus* from Mexico (Moravec et al., 1997; Mayén-Peña and Salgado-Maldonado, 1998; Goldberg et al. 2014a, b) and *Mesoscincus managuae* from Nicaragua (Goldberg and Bursey, 2009, 2012). *Spauligodon oxkutzcabiensis* was described from the gecko *Thecadactylus rapicauda* from Yucatan by Chitwood (1938). See Goldberg and Bursey (2010) for other hosts. *Hemidactylus mabouia* and *Phyllopezus pollicaris* should be added to the host list for *S. oxkutzcabiensis* (Sousa et al. 2014). *Oochoristica parvula*, *Parapharyngodon alvarengai* and *Spauligodon oxkutzcabiensis* in *P. muralis* are new host records.

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***Sceloporus aurantius*. Coloration.** Grummer and Bryson (2014) described this species from oak forest in the Sierra del Laurel in southwestern Aguascalientes and southern Zacatecas, Mexico. *Sceloporus aurantius* is a member of the *S. scalaris* group, and shares the following morphological characters with other species in the group: parallel lateral scales rows (except in *S. goldmani*); femoral pore series in contact or separated by no more than two scales; females with smooth preanal scales; and males with lateral abdominal color patches (lateral edge of body and venter with an orange streak in males); it differs from all members of the group (except *S. chaneyi*) by the lack of blue belly bars (semeions) in adult males.

The type series was collected on 20 July 2010 in bunchgrass within oak forest in the Sierra del Laurel, Aguascalientes, and includes four females with well-developed eggs (Grummer and Bryson, 2014). These authors indicated that in addition to distribution, the only character they aware of to distinguish *S. aurantius* from other members of the *S. scalaris* group is the lack of blue belly patches and the presence of an orange dorsolateral streak in males. They also commented that the ventral coloration in males is critical for sexual selection and species-specific mate recognition, so this morphological character probably is important in diagnosing the species. The absence of abdominal semeions was not noted by Smith et al. (1997), who included four paratypes in the description of *S. scalaris brownorum*, from the same locality as *S. aurantius* (Sierra del Laurel, Aguascalientes). McCranie and Wilson (2001) described the coloration of a specimen from Ciénega, Sierra del Laurel, Aguascalientes, as having the area below the lateral stripes orange with cream spotting, and the venter cream with a slight greenish tinge.

Herein we present evidence of the presence of semeions in males of *S. aurantius* found at the type locality (Sierra del Laurel, Aguascalientes) from February to May 2014, coinciding with the mating season (Fig 1). The semeions were evident in all the adult males observed, and were separated from each other by two scales anteriorly and five scales posteriorly. Additionally the dorsum of all adult males with blue semeions was patternless, and dark mottling was present on their chin.

Grummer and Bryson (2014) did not report these characteristics, perhaps because of the time of year when they collected the holotype and paratypes (July), after the mating season, which they confirmed by finding four females with well-developed eggs. *Sceloporus aurantius* can be distinguished from *S. brownorum* in Aguascalientes by the presence of orange lateral abdominal patches, and its distribution is restricted to Sierra del Laurel; conversely, lateral abdominal parches are absent in *S. brownorum*, and the species is found in the Sierra Fría.

Acknowledgments.—We collected the specimens under permit SEMARNAT-SGPA/DGVS/05143/14.

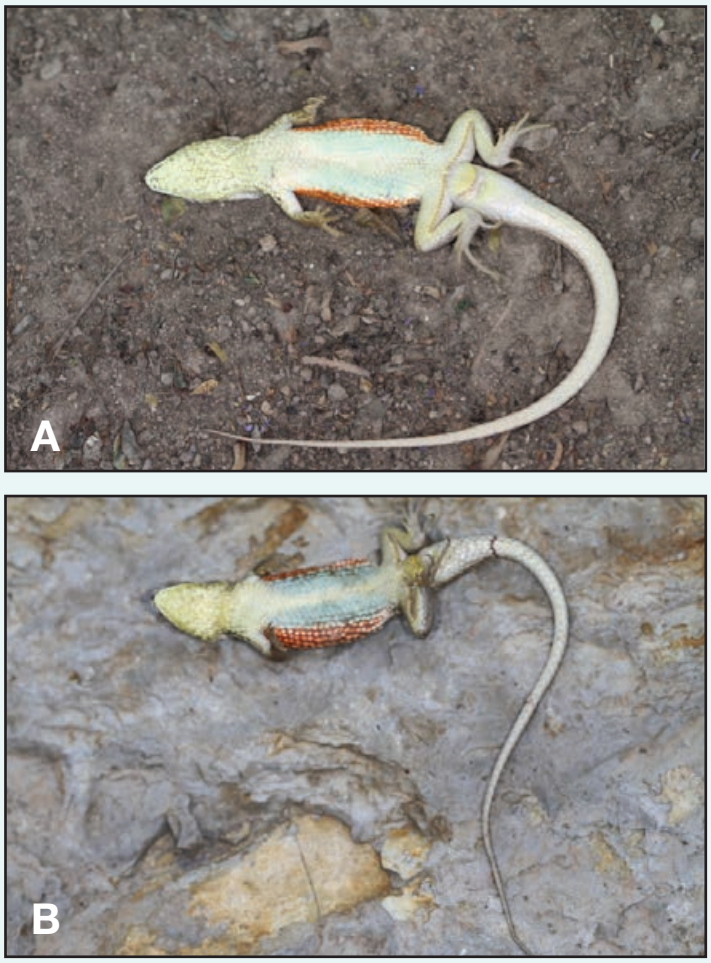

Fig. 1. Male *Sceloporus aurantius* (A, B) from Sierra el Luarel, Aguascalientes, Mexico, displaying blue abdominal semeions.
© Gustavo E. Quintero-Díaz

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Reptilia: Squamata (snakes)

***Leptodrymus pulcherrimus* (Cope, 1874). Diet.** Little information is available on the diet of *Leptodrymus pulcherrimus*, as Köhler (2008) indicated that it consists mainly of lizards and Solórzano (2004) noted that it probably consists of frogs and lizards. In Guatemala, Manuel E. Acevedo (pers. comm. to JS, 28 August 2015) fed a captive individual of this species the teiid lizard *Aspidoscelis motaguae* (the two species mostly are allopatric), and also witnessed another individual of *L. pulcherrimus* regurgitating an *A. deppii*.

On 5 July 2015 at 1035 h, at Lost Canyon Nature Reserve (12.70582°N, 86.41777°W; datum WGS 84; elev. 140 m), San Juan de Dios, El Jicaral, Departamento de León, Nicaragua, a *L. pulcherrimus* (total length ca. 90 cm) was encountered on the ground preying on an adult male *Sceloporus variabilis* (Fig. 1) in a transitional area between Lowland Dry and Lowland Arid Forest (Holdridge, 1967; Savage, 2002). The *L. pulcherrimus* had grabbed the head of the *S. variabilis* with its posterior teeth, and the lizard already appeared dead. We did not remain to witness the swallowing process. This event took place in a partly cloudy day with no rain about 3 m from the bank of the Río San Juan de Dios, where wild grass was being partially cleared, in an area of secondary and deeply fragmented gallery forest.

Fig. 1. An adult *Leptodrymus pulcherrimus* preying on an adult *Sceloporus variabilis* at Lost Canyon Nature Reserve, San Juan de Dios, El Jicaral, Departamento de León, Nicaragua. © Richard Leonardi

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***Leptophis diplotropis*. Diet.** The Pacific Coast Parrot Snake is a Mexican endemic species with a distribution ranging from Chihuahua and Sonora southward to Oaxaca, at elevations from sea level to 2,500 m (Oliver, 1948; Wilson and Johnson, 2010). This diurnal species is considered abundant throughout its range and occurs a wide variety of habitats, including tropical dry forest, semi-deciduous forest, mangrove forest, and urban, semi-urban and agricultural areas (Oliver, 1948; Hardy and McDiarmid, 1969; Berriozabal-Islas et al., 2012). *Leptophus diplotropis* is listed as Least Concern by the IUCN (Ponce-Campos and García, 2007). To our knowledge, little information has been published on the life history of this species, particularly with regard to its dietary habits. Based on an examination of stomach contents, Oliver (1948) reported *Agalychnis dacnicolor*, *Rana* (= *Lithobates*) *pipiens*, and an unidentified hylid frog, in the diet. Hardy and McDiarmid (1969) reported *Agalychnis dacnicolor* and *Tlalocohyla smithii* in the diet, and more recently Hernández-Ríos and Cruzado-Cortés (2011) and Calderón-Patrón et al. (2014) observed active predation by this snake on *Phyllodactylus tuberculosis* and *Smilisca baudinii*, respectively. Herein we provide an additional record on the feeding habits of *L. diplotropis*.

On 30 November 2015 at ca. 1700 h, we observed an individual of *L. diplotropis* consuming a road-killed Lowland Burrowing Treefrog, *Smillisca fodiens*, on the Verde Vallarta way, Puerto Vallarta (20º42'43.85"N, 105º13'31.95"W; datum WGS 84; elev. < 12 m). We left the snake undisturbed until to the treefrog was completely ingested (Fig. 1), and soon after removed the snake from the road and relocated it into a forested area at Centro Universitario de la Costa of the Universidad de Guadalajara, located about 2 km from the observation point. This observation not only represents an additional prey item of the dietary habits of *Leptophis diplotropis*¸ but also one of the few records of a frog carcass consumed by a snake.

Fig. 1. A *Leptophis diplotropis* feeding on road-killed treefrog, *Smillisca fodiens*, at Puerto Vallarta, Jalisco, Mexico.
© Mariana González-Solórzano

Acknowledgments.— The Entomology Laboratory at the Centro Universitario de la Costa of Universidad de Guadalajara provided facilities for the preparation of this manuscript. We thank Pierre Charruau for information that improved this manuscript, and Gabriela Ramírez for help in preparing the photos. MGS was awarded with a travel grant from the Universidad Politécnica del Centro, in Tabasco.

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***Masticophis mentovarius* (Duméril, Bibron, & Duméril, 1854). Diet.** The Zumbadora or Neotropical Whipsnake, *Masticophis* (= *Coluber*) *mentovarius* is a widely distributed generalist forager with a varied diet that includes arthropods, fishes, frogs, lizards, rodents, opossums, birds and their eggs, and other snakes (Savage, 2002; Solórzano, 2004; Dugan and Figueroa, 2008; Calderón Patrón et al., 2011). In the province of Guanacaste, in northwestern Costa Rica, Guyer and Laska (1996) and Solórzano (2004) both reported failed predatory attempts by *M. mentovarius* on a juvenile *Boa imperator* and an adult *Crisantophis nevermanni*, respectively.

At 1745 h on 25 May 2015, along a trail that connects El Pochote with Pueblo Nuevo (11.09565°N 85.69811°W; WGS 84; elev. 35 m), ca. 8 km E of El Ostional, Municipio de San Juan del Sur, Departamento de Rivas, Nicaragua, we observed an adult *M. mentovarius* on the ground preying on an adult *Conophis lineatus* (Fig. 1). This locality, close to the extreme western border with Costa Rica, retains patches of relatively well-preserved Lowland Dry Forest (Holdridge, 1967; Savage, 2002). When we came upon the event, the *M. mentovarius* was biting (but not constricting) the head of the *C. lineatus*, as the smaller snake struggled. Before long the activity of the *C. lineatus* declined, and was limited to a few sporadic movements. The swallowing process took ca. 15 min: approximately 10 min to swallow the first one-third of the body of the *C. lineatus*, and five min for the remaining two-thirds. Although we maintained a prudent distance, the *M. mentovarius* seemed unaffected by our presence.

Fig. 1. An adult *Masticophis mentovarius* preying on an adult *Conophis lineatus*. © José Gabriel Martínez-Fonseca

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Oxybelis fulgidus. **Diet.** The Green Vinesnake, *Oxybelis fulgidus*, is a fast and agile, arboreal and diurnal colubrid with a broad distribution that extends from the Isthmus of Tehuantepec, Mexico, to Argentina (Solórzano, 2004). This snake is a sit-and-wait predator that commonly remains motionless in a tree or bush for up to several days (Leenders, 2001), but also is known to forage for prey (Martins and Oliveira, 1998). Its diet consists of numerous species of frogs, lizards, birds, and the occasional mammal (Savage, 2002).

This species is opportunistic in its dietary habits, and is known to include bird species of the following families: Bucconidae, Dendrocolaptidae, Emberizidae, Fringillidae, Furnariidae, Muscicapidae, Parulidae, Pipridae, Tyraniidae, Thraupidae, Trochilidae and Turdidae (Henderson and Binder, 1980; Martins and Oliveira, 1998; Leenders and Colwell, 2003; Rodrigues et al., 2005; Endo et al., 2007; Scartozzoni et al., 2009; Figueroa and Rojas Valerio, 2011; Van Dort, 2011; Miranda et al. 2013; Solórzano and Simms, 2015).

On 4 May 2014 at ca. 0830 h, one of us (BRB) found an adult *O. fulgidus* at Vista Alegre, Distrito de Arraiján, Provincia de Panamá Oeste, Panama (8°56'07.86"N, 79°41'32.04"W; WGS 84) starting to consume a House Wren (*Troglodytes aedon*; Troglodytidae) ca. 0.5 m above the ground on a chain-link fence at private estate. BRB photographed the event, and continued to observe the ingestion process for about two minutes. This note represents the first time that *T. aedon* has been reported in the diet of *O. fulgidus.*

Fig. 1. An adult *Oxybelis fulgidus* starting to consume a *Troglodytes aedon* in the private estate of Vista Alegre, Distrito de Arraiján, Provincia de Panamá Oeste, Panama. © Bonarge Rodríguez-Beitía

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***Sibon anthracops* (Cope, 1868). Reproduction.** *Sibon anthracops* is a moderately abundant coralsnake mimic that occurs from Guatemala to Panama, mostly on the Pacific versant, at elevations from sea level to 1,398 m (Savage, 2002; Köhler, 2008; Dwyer, 2015; Espinal and Solís, 2015; Köhler et al., 2015). In Nicaragua, this species has been recorded only on the Pacific versant at elevations up to 960 m (Köhler, 2001; Sunyer and Köhler, 2010).

Kofron (1987) provided reproductive data on *S. anthracops*, noting that three adult females (snout–vent length [SVL] not included, locality and date of collection only reported for one specimen [2 July, El Salvador]) contained potential clutches of three eggs each, as indicated by enlarged yolk follicles. Goldberg (2004) presented additional data on four females from Provincia de Guanacaste, Costa Rica, as follows: one (400 mm SVL, collected between August and October) contained five oviductal eggs (mean length 23.4 mm), which constitutes the largest reported egg clutch for this species; another (386 mm SVL, collected on 2 July) contained three enlarged ovarian follicles; a third specimen (365 mm SVL, collected 31 May) was not undergoing yolk deposition; and a final specimen (355 mm SVL, collected 29 October) was undergoing yolk deposition and constitutes the smallest reported reproductively active *S. anthracops*. Further, Solórzano (2004) indicated that egg clutches have been recorded in November, and that a pair was found in apparent courtship in late December at Parque Nacional Santa Rosa, Provincia de Guanacaste, Costa Rica.

In this note we report additional reproductive information on a specimen of *S. anthracops* from Nicaragua. On on 3 November 2015 at 1920 h, at km 45 along the paved road from Diriamba to Casares-La Boquita (11.83752°N 86.26009°W; WGS 84; elev. 495 m), Municipio de Diriamba, Departamento de Carazo, Nicaragua, JGMF and LGL accidentally ran over an adult female *S. anthracops* (366 mm SVL; 494 mm total length; 177 ventrals; 75 subcaudals; Museo Herpetológico de la UNAN-León, Nicaragua, MHUL 172; Fig. 1) with a vehicle. The snake was crossing the road in a disturbed area that originally consisted of Lowland Dry Forest (Holdridge, 1967; Savage, 2002). Although *S. anthracops* essentially is an arboreal species, often individuals are found on the ground or on roads at night (Savage, 2002). The snake contained three soft oviductal eggs (range average ± SD), as follows: length 24.4–26.2 mm (25.5 ± 0.99); and width 6.8–7.4 mm (7.1± 0.3). Their size constitutes the largest recorded oviductal eggs for this species (Fig. 1; Goldberg, 2004).

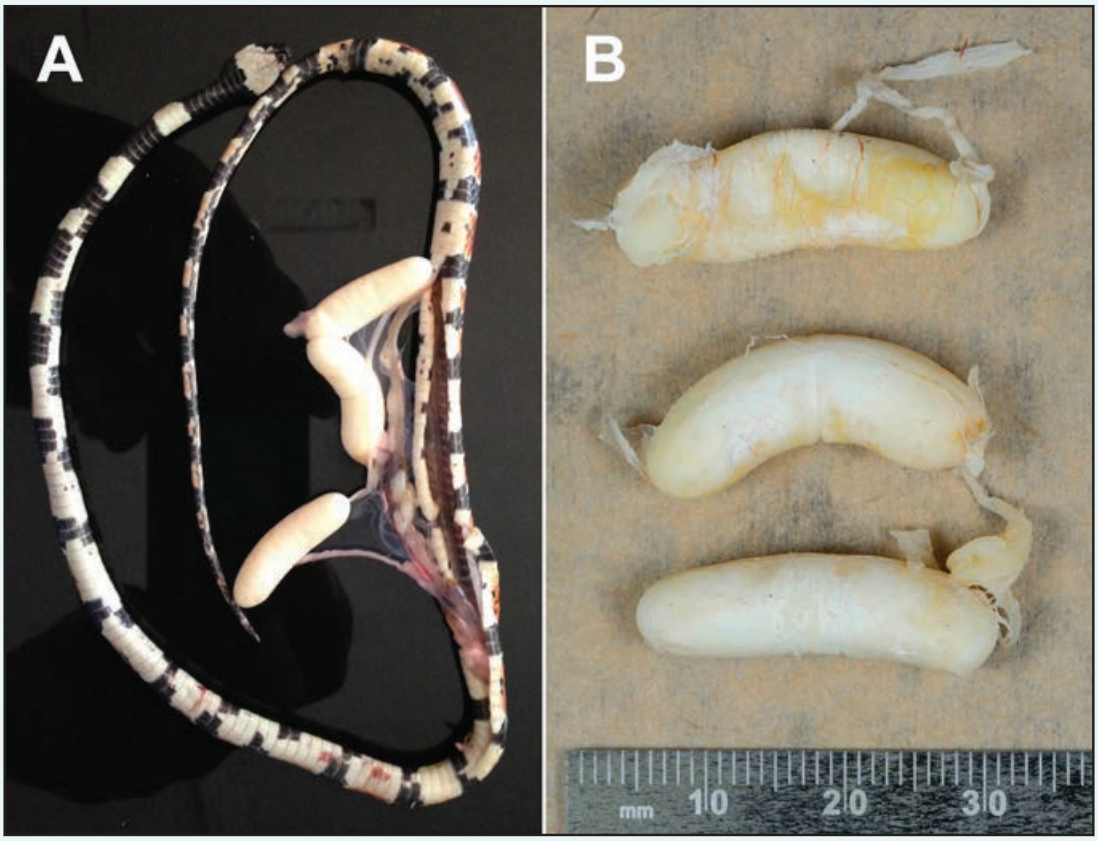

Fig. 1. (A) A freshly road-killed adult female *Sibon anthracops* from Departamento de Carazo, Nicaragua, with three oviductal eggs; and (B) a close-up of the eggs ofter two days in 70% ethanol. © José Gabriel Martínez-Fonseca

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***Stenorrhina freminvillii* (Duméril, Bibron, & Duméril, 1854). Reproduction.** *Stenorrhina freminvillii* is a locally abundant fossorial snake with a distribution that extends from Mexico to Costa Rica at elevations from sea level to 2,200 m (Savage, 2002; Köhler, 2008). In Nicaragua, this species is known to occur in the dry forests of the Pacific versant at elevations up to 760 m (Köhler, 2001; Sunyer and Köhler, 2010).

Censky and McCoy (1988) provided most of the available reproductive data on *S. freminvillii*, based on specimens from the Península de Yucatán, Mexico. They noted that females appear to mature in one year, at a snout–vent length of 448 mm, and deposit one or two clutches of eggs during the dry season, from October to April. Clutch sizes averaged 11.6 ± 2.87 (± SD), and the number of eggs ranged from 5 to 19 eggs (n = 57. The egg size averaged 20.9 ± 3.1 mm and ranged from 15 to 28 × 10 mm (n = 384). In Guatemala, Campbell (1998) noted records of females laying eggs early in the rainy season, as females from Péten collected in April contained 4–6 eggs and live individuals deposited eggs in May and June. In Costa Rica, Solórzano (2004) recorded clutches of up to nine eggs from the Pacific central of the country in November and neonates from January to March, during the dry season. The purpose of this note is to report the first reproductive information for *S. freminvillii* from Nicaragua.

On 21 September 2011 at 905 h, in Comunidad de San Gregorio de las Cañas (11.83890°N, 86.30280°W; WGS 84; elev. 422 m), Municipio de Diriamba, Departamento de Carazo, Nicaragua, one of us (LGL) found a *S. freminvillii* in the process of laying eggs in a small depression on the dirt floor near a corner of a warehouse (Fig. 1). When first observed the snake had deposited four eggs and was laying a fifth, and within seven minutes deposited

two more (Fig. 1B). Once finished depositing her eggs, the snake remained with them but appeared listless. At that point LGL left, but returned three hours later and found no sign of the snake, but all seven eggs remained. At ca. 700 h the following morning he returned to measure the eggs, but they were gone; he found no evidence of what might have happened, as there were no shell remains, moist areas in the ground, or any indication of a predator (e.g., footprints or feces). Previosuly, however, rats (*Rattus norvegicus*) and opossums (*Didelphis virginiana*) had been seen in the vicinity.

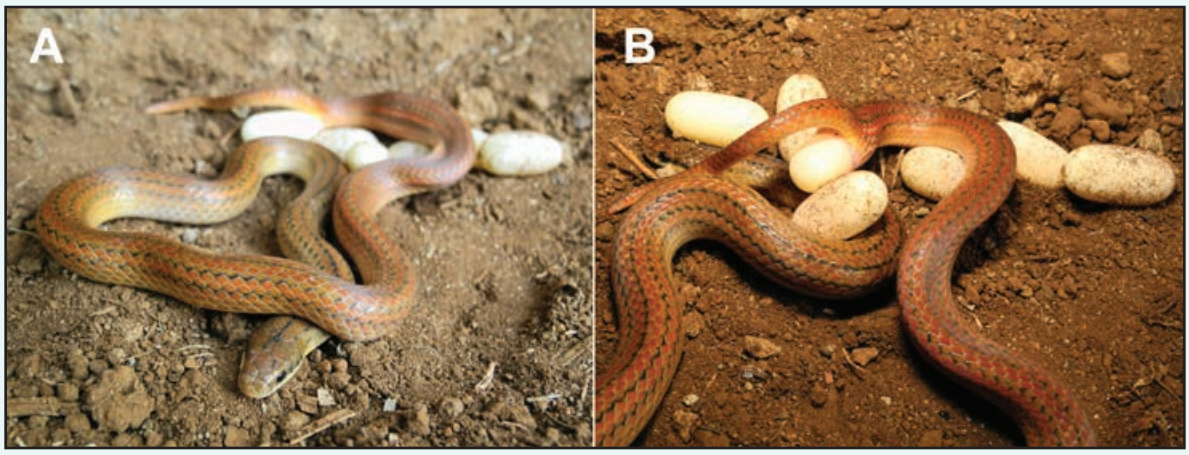

Fig. 1. A *Stenorrhina freminvillii* from San Gregorio de las Cañas, Departamento de Carazo, Nicaragua, in the process of depositing (A) her 6th and (B) 7th (last) egg. © Luis Gutiérrez-López

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***Thamnophis proximus*. Behavior**. The Western Ribbon Snake, *Thamnophis proximus*, is widely distributed across the central United States, southward at low, moderate, and intermediate elevations along the Atlantic slopes of Mexico and Central America, and on the Pacific slope from Guerrero, Mexico, to Costa Rica (Lee, 2000). In the Yucatan Peninsula this semiaquatic snake is moderately common, but rarely is found far from permanent fresh water such as marshes, aguadas (ponds), streams, lakes, and cenotes (Lee, 1996; Campbell, 1998). This species can be active by day or night and mostly is terrestrial, although Lee (1996) found some individuals coiled in emergent vegetation at 0.5 m above the water.

In the early morning of 29 August 2015, PMBG found four individuals of *T. proximus* on a Basket Ti-tie Palm, *Desmoncus schippii*, at 2–3 m above ground level (Fig. 1), in the vicinity of an artificial pond at Rancho La Lupita (18°45'33.8"N, 88°31'38.5"W; datum WGS 84; elev. 30 m) between the town of Bacalar and the village of Reforma in southern Quintana Roo, Mexico. Perching in the same palm were an individual of *Leptodeira septentrionalis*, several anole lizards (*Norops lemurinus*, *N. rodriguezii*, and *N. sericeus*), a juvenile *Basiliscus vittatus*, and some hylid frogs. The site was visited by PMBG on the night of 31 August (two days later), and he saw five *T. proximus* and one *L. septentrionalis* in the same palm. During a third visit on the night of 14 September, PMBG observed three individuals of *T. proximus* at the site. Arboreal habits and aggregation behavior rarely has been reported in *T. proximus* (Rossman et al. 1996: 229) and it remains unclear whether this aggregation might be associated with mating events.

Fig. 1. *Thamnophis proximus*, observed at 2–3 m above ground level on a Basket Ti-tie Palm.

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Comments on the natural history of the rare salamander *Pseudoeurycea conanti* (Caudata: Plethodontidae) and the snake *Thamnophis chrysocephalus* (Squamata: Natricidae) from Oaxaca, Mexico

Pseudoeurycea conanti Bogert, 1967, is a plethodontid salamander endemic to the state of Oaxaca. Our knowledge of the distribution and ecology of this species is meager, however, as records of this species are known only from three localities: Pluma Hidalgo (Bogert, 1967), from near Municipio Putla Villa de Guerrero, and from Villa Sola de Vega (see Parra-Olea et al., 1999).

On 18 June 2015, we stopped near the village of La Cumbre (16.462740°N, -97.011489°W; WGS 84; elev. 2,093 m), in Municipio de Villa Sola de Vega, ca. 0.5 km from two records cited in Parra-Olea et al. (1999). After exploring the surrounding vegetation (pine-oak forest) for approximately 1 h, we uncovered five adult *P. contanti*; two were under freshly fallen limbs and three inside decomposing logs (Fig. 1). On 26 June 2015, VMS returned to the site and inspected the same microhabitats, and found two more adults of *P. conanti* and three individuals (two adults, one juvenile) of the snake *Thamnophis chrysocephalus*, a country endemic (Fig. 2). During this visit, VMS found all individuals of both species under freshly fallen limbs; two of the snakes were under the same limbs that sheltered salamanders during our original visit. Three of the *P. conanti* (CIB-4876-4878) were collected and deposited in the herpetological collection of the Centro de Investigaciones Biológicas of the Universidad Autónoma del Estado de Hidalgo.

Pseudoeurycea conanti apparently is an extremely rare salamander, as Parra-Olea et al. (2008) reported this species as known from fewer than 10 specimens. Of those, D. B. Wake found two at La Cumbre, one in 1974 and the second in 1981 (Parra-Olea et al., 1999). Regarding the conservation status of *P. conanti*, the IUCN and the SEMARNAT systems consider this species as Endangered, and the EVS system placed this species in the high vulnerability category (score = 16) (Wilson et al., 2013a; Mata-Silva et al., 2015). Conversely, *T. chrysocephalus* is regarded by the IUCN as a species of Least Concern (LC) but as Endangered by SEMARNAT, whereas the EVS system placed this snake in the high vulnerability category (score = 14) (Wilson et al., 2013b; Mata-Silva et al., 2015). The dwindling availability of fallen logs in the area might be of concern because local villagers collect them for fuel, thereby reducing the number of potential microhabitats for both species.

Fig. 1. Two adults of the seven individuals of *Pseudoeurycea conanti* found at La Cumbre, Municipio de Villa Sola de Vega, Oaxaca, Mexico. © Vicente Mata-Silva

Fig. 2. One of the two adults (a) and the juvenile (b) of *Thamnophis chrysocephalus* found in microhabitats used by *Pseudouerycea conanti* at La Cumbre, Municipio de Villa Sola de Vega, Oaxaca, Mexico. © Vicente Mata-Silva

Acknowledgments.—A special thanks goes to Eduardo Mata-Silva for his invaluable help and company, to Aurelio Ramírez-Bautista, Raciel Cruz-Elizalde, and Christian Berriozabal-Islas for logistical support, and to Irene Goyenechea Mayer-Goyenechea for providing the specimen numbers. The collecting permit (SGPA/DGVS/04149/15) was issued by SEMARNAT to ARB.

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Amphibia: Anura

Family Bufonidae

***Anaxyrus punctatus* (Baird and Girard, 1852).** MEXICO: HIDALGO: Municipio de Chilcuautla, Cerro del Elefante (20.251718ºN, -99.205589º W; WGS 84) elev. 1,932 m; 5 September 2015; César Mariano Torres-Núñez. The individual was found under a rock. A photo voucher (CH-CIB 47) 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. 8.3 km to the S (airline distance) in the Municipio de Mixquiahuala (listed by Flores-Villela et al. [1991] as "20 km NE of Tula"). It also represents the sixth record for this species in the state.

Fig. 1. *Anaxyrus punctatus* (CH-CIB 47) from Cerro del Elefante, Chilcuautla, Hidalgo. © Leonardo Fernández-Badillo

Acknowledgments.—Funding and logistical support was provided by Projects FOMIX-CONACyT-HGO-2012-191908 and SEP-CONACyT Ciencia Básica 222632.

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Family Bufonidae

***Incilius valliceps* (Wiegmann, 1833)**. NICARAGUA: RIVAS: Municipio de Cárdenas, Reserva Silvestre Privada La Conga (11.23450°N, 85.58131°W; WGS 84); elev. 63 m; 15 October 2011; José Gabriel Martínez-Fonseca and Luis E. Gutiérrez-López. A photo voucher of this individual is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8613; Fig. 1.). The toad was found active on a trail at night (1840 h) ca. 5 m from a small stream that empties into Lago de Nicaragua, which is located ca. 1 km to the N, in a transitional area between Lowland Moist Forest and Lowland Dry Forest (Holdridge, 1967; Savage, 2002) that contains some relatively well-preserved, non-flooded forest patches. This locality represents the first record for the department of Rivas, the first record for the Pacific versant of Nicaragua, and the westernmost record for this species in the southern portion of its range, extending its distribution ca. 60 km W from its closest Nicaraguan locality (Río Papaturro, Refugio de Vida Silvestre Los Guatuzos, Departamento de Río San Juan, Senckenberg Forschungsinstitut und Naturmuseum SMF 87257–8, 98567), and ca. 50 km NW from its closest locality in Costa Rica (Porter, 1970; Savage, 2002).

Fig. 1. *Incilius valliceps* from Reserva Silvestre Privada La Conga, Departamento de Rivas, Nicaragua.
© José Gabriel Martínez-Fonseca

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

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Family Hylidae

***Agalychnis moreletii* (Duméril, 1853).** MEXICO: OAXACA: Municipios de Pluma Hidalgo y San José Tenango. We collected the following five specimens: four in Pluma Hidalgo in April 2008, of which three (MZFC 22439–22441) were found near the main riverbed at Finca Copalita (15°57'55.9"N, -96°27'01.6"W), and one (MZFC 22446) at Finca el Jordan (15°55'45.9"N, -96°26'15.5"W). The last specimen (MZFC 29168) was collected on 12 July 2013 in a small water storage tank of a house near the border of the town, 300 m NE of the municipal market of San José Tenango (18°09'33.3" N, -96°42'58.28"W). All individuals were found in secondary vegetation.

We obtained the records indicated below from the California Academy of Sciences (CAS), Carnegie Museum Herpetology Collection (CM), the University of Colorado Herpetological Collection (UCM), and the University of Kansas Herpetological Collection (KU) (see Literature Cited). The record for San José Tenango is located ca. 70.5 km NW (by air) from previous records from near Vista Hermosa, Oaxaca (UCM 52484), and ca. 88.3 km S (by air) from previous records from near Córdova, Veracruz (CAS 98919 and CM 41250). This record fills a distributional gap between these localities.

The specimens from near Pluma Hidalgo, Oaxaca, were found ca. 185.2 km S (by air) from previous records from near Vista Hermosa, Oaxaca (UCM 52484), and ca. 178.3 km SW (by air) from previous records from near Matías Romero, Oaxaca (KU 224514) (Fig. 1). These records extend the distribution of this species to another mountain system, the Sierra Madre del Sur, in southern Oaxaca.

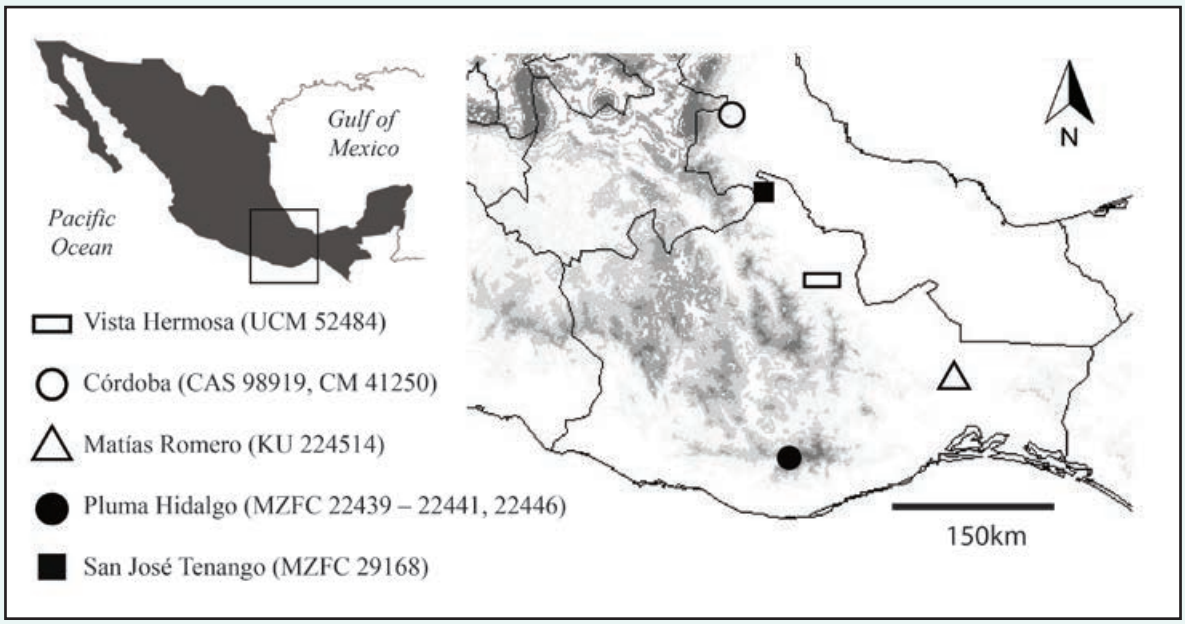

Fig. 1. Localities for *Agalychnis moreletti* in Mexico.

Acknowledgments.—Our fieldwork was funded by Comisión Nacional para el Conocimiento y Uso de la Biodiversidad (CONABIO), as part of the project JF058. Collecting permit FAUT- 0015 was granted to Oscar Flores-Villela by the Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT). We thank the authorities in the municipalities for granting permits to search in their regions.

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Family Hylidae

***Smilisca puma* (Cope, 1885)**. NICARAGUA: ATLÁNTICO SUR: Municipio de Bluefields, Aguazarca (11.42821°N, 84.23002°W; WGS 84); elev. 115 m; 15 April 2014; José Gabriel Martínez-Fonseca, Lenin Alexander Obando, Julio Loza, Luis Enrique Gutiérrez-López, and Marlon Francisco Chávez-Velásquez. A photo voucher of this individual is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8614; Fig. 1.). This frog displayed an unusual reddish-orange dorsal coloration, as the dorsal coloration of this species has been described as yellowish (or golden) tan or pale brown (Duellman, 1968, 1970; Savage, 2002). The individual was found active at night (0020 h) moving along a dry branch ca. 1.6 m above the ground near a small stream, in an area consisting of Tropical Moist Forest (Holdridge, 1967). At that time the general area contained several well-preserved patches of forest that were being logged, and it's highly unlikely that this specific forest patch remains. This locality represents the first record for the department of Atlántico Sur, and the northernmost record for this species, extending its distribution ca. 65 km NW from its closest reported locality (Dos Bocas de Río Indio, Departameno de Río San Juan, Nicaragua; Sunyer et al., 2009). The Aguazarca locality also is coincident with the northern border of the estimated distributional range Duellman (1968) proposed for this species.

Fig. 1. *Smilisca puma* from Aguazarca, Departamento Atlántico Sur, Nicaragua.
© José Gabriel Martínez-Fonseca

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

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Reptilia: Squamata (lizards)

Family Iguanidae

***Ctenosaura similis* Gray, 1830.** MEXICO: OAXACA. San Pedro Totolapan, Municipio de San Pedro Totolapan (16°40'33"N, 96°18'45"W; WGS 84), elev. 972 m; 27 June 2015; Haydée Morales-Flores, Elí García-Padilla, and Larry David Wilson. The lizard was found along the side of the paved road cutting through tropical lowland deciduous forest, near the entrance to the town. A photograph of the individual, a juvenile (Fig. 1), is deposited at the University of Texas at El Paso Biodiversity Collection (Photo Voucher UTEP G-2015.13). This voucher represents a new municipality record and a range extension of ca. 68 km to the NE of the closest known locality, listed as ca. 40 mi (64.4 km) WNW of Tehuantepec (LACM herps 61932; www.vertnet.org; accessed 27 November 2015).

Acknowledgments.—A special thanks to Haydée Morales-Flores for field assistance. Arthur Harris kindly provided the photo voucher number.

Fig. 1. A juvenile *Ctenosaura similis* (UTEP G-2015.13) from Totolapan, Municipio de San Pedro Totolapan, Oaxaca, Mexico. © Elí García-Padilla

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Family Teiidae

***Aspidoscelis motaguae* (Sackett, 1941).** MEXICO: OAXACA: Municipio de San Bartolo Coyotepec, San Bartolo Coyotepec (16.961710°N, -96.651594°W; WGS 84), elev. 1,743 m; 19 June 2013; Vicente Mata-Silva. Photo vouchers of this lizard (UTEP G-2015.9; Fig. 1) and other individuals in this note are deposited in the University of Texas at El Paso Biodiversity Digital Collection. This record lies ca. 12 km S of a previously reported locality in the vicinity of Santa Lucia, Oaxaca (Duellman and Zweifel, 1962), and ca. 42 km W of the second new locality (Hierve el Agua) reported below. This individual (Fig. 2; UTEP G-2015.10) was observed foraging in disturbed thorn scrub woodland along the periphery of the town of San Bartolo Coyotepec, Oaxaca.

Fig. 1. Adult *Aspidoscelis motaguae* (UTEP G-2015.9) from San Bartolo Coyotepec, Municipio de San Bartolo Coyotepec, Oaxaca, Mexico. © Vicente Mata-Silva

Individuals of *A. motaguae* also were observed on 25 June 2015 at Municipio de San Lorenzo Albarradas, Hierve el Agua (16.863799°N, -96.276872°W; WGS 84), elev. 1,684 m; Vicente Mata-Silva. This record lies within a distributional gap between previously reported localities ca. 48 km SE in the vicinity (3 km S) of Nejapa de Madero, Oaxaca (Duellman and Zweifel, 1962) and ca. 50 km NW near (6.8 km N) the junction of Rte. 175 and 190 (MVZ 14693, 1977; VertNet.org, accessed 29 June 2015). The individual in Fig. 2 (UTEP G-2015.10) represents one of four adults observed actively foraging in thorn scrub woodland at this site.

Another *A. motaguae* was seen on 27 July 2012 at Mucicipio de Oaxaca de Juárez, Fraccionamiento Casa del Sol, Agencia de San Luis Beltrán (17.095514°N, -96.688878°W; WGS 84) elev. 1,550 m; Elí García-Padilla. This individual represents the northernmost published distribution record of *A. motaguae* we are aware of, ca. 3.6

km NE of the locality in the vicinity of Santa Lucia, Oaxaca (Duellman and Zweifel, 1962), and ca. 3.7 ca. km NW of the locality near (6.8 km N) the junction of Routes 175 and 190 (MVZ 14693, 1977; VertNet.org, accessed 29 June 2015). Although the range extension is modest, this record is notable due to the significant temporal separation from the two closest records (reported in 1962 and 1977), and considering that it falls well within the boundaries of the largest city in the state of Oaxaca (Ciudad de Oaxaca). The individual (Fig. 3; UTEP G-2015.11) was photographed in a patch of disturbed grassland and thorn scrub woodland amid dense urban and suburban development. This observation suggests that *A. motaguae* might be persisting in this area within small habitat fragments, despite significant disturbance.

All the localities reported here represent new municipality records for this discontinuously distributed species in the state of Oaxaca.

Fig. 2. Adult *Aspidoscelis motaguae* (UTEP G-2015.10) from Hierve el Agua, Municipio de San Lorenzo Albarradas, Oaxaca, Mexico. © Vicente Mata-Silva

Fig. 3. Adult *Aspidoscelis motaguae* (UTEP G-2015.11) from Fraccionamiento Casa del Sol, Municipio de Oaxaca de Juárez, Oaxaca, Mexico. © Elí García-Padilla

Acknowledgments.—A special thanks to Eduardo Mata-Silva and Isabel Cortez-Cristobal for their assistance. Arthur Harris kindly provided the photo voucher numbers.

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Reptilia: Squamata (snakes)

Family Colubridae

***Chironius grandisquamis* (Peters, 1868)**. NICARAGUA: RIVAS: Municipio de Cárdenas, Finca Sierra Serena (11.21038°N, 85.55101°W; WGS 84); elev. 263 m; 27 March 2011; Henry López Guevara, and Juan Cruz Games Castellón. Photo vouchers of this individual are deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8628; Fig. 1.). A subadult male of this species was found at 1140 h submerged in a small pool of lentic water along the riverbed of a seasonally dry stream, in a relatively well-preserved patch of forest consisting of a transitional area between Lowland Dry Forest and Lowland Moist Forest (Holdridge, 1967; Savage, 2002). This locality represents the first record for the department of Rivas, the first record for the Pacific versant of Nicaragua, and the westernmost record for this species, extending its distribution ca. 100 km SW and 135 km W from its closest Nicaraguan localities at Juigalpa, Departamento de Chontales, and Refugio Bartola, Departamento de Río San Juan, respectively (Köhler, 2001), and ca. 35 km NW from its closest locality in Costa Rica (Savage, 2002).

Fig. 1. (A) A subadult male *Chironius grandisquamis* from Finca Sierra Serena, Departamento de Rivas, Nicaragua; and (B) a detail of the head of the same individual. © Henry Julián López Guevara

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

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Family Colubridae

***Drymarchon melanurus* (Duméril, Bibron & Duméril, 1854).** MEXICO: OAXACA: Nejapa de Madero, Municipio de Nejapa de Madero (16°33'29"N 96°01'30"W; WGS 84), elev. 697 m; 27 June 2015; Haydée Morales-Flores, Elí García-Padilla, and Larry David Wilson. A photograph of this specimen is deposited at the University of Texas at El Paso Biodiversity Digital Collection (Photo Voucher UTEP G-2015.12). The snake was found dead on a paved road in the interior of town, where the surrounding vegetation consists of tropical lowland deciduous forest. This individual represents a new municipality record and the first confirmed occurrence of *D. melanurus* in the Montañas y Valles del Centro physiographic region of Oaxaca (see Mata-Silva et al., 2015), with the closest known record ca. 67 km to the ESE in Cerro Guiengola, in the Planicie Costera de Tehuantepec physiographic region (Martín-Regalado et al., 2011).

Fig. 1. An Adult *Drymarchon melanurus* (UTEP G-2015.12) from Nejapa de Madero, Municipio de Nejapa de Madero, Oaxaca, Mexico. © Haydée Morales-Flores

Acknowledgments.—A special thanks to Haydée Morales-Flores for assistance in the field and with photography. Arthur Harris kindly provided the photo voucher number.

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Family Colubridae

***Lampropeltis ruthveni* (Blanchard, 1920).** MEXICO: HIDALGO: Municipio de Huichapan, Ejido Gavillero de Mintho (20.370800ºN, -99.579414ºW; WGS 84) elev. 2,314 m; 7 February 2015; Juan Alfonso Hernández-Melo. The snake was found under a rock near a road, in xerophytic scrub. A photo voucher (CH-CIB 037; 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 individual represents a municipality record, with the closest known locality ca. 13.4 km to the SW (airline distance) in the vicinity of El Pedregoso, Municipio de Nopala de Villagrán, Hidalgo (Roth-Monzón et al., 2011).

Fig. 1. *Lampropeltis ruthveni* (CH-CIB 037) from Ejido Gavillero de Mintho, Huichapan, Hidalgo.
© Juan Alfonso Hernández-Melo

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Family Colubridae

***Senticolis triaspis* (Cope, 1866)**. NICARAGUA: JINOTEGA: Wiwilí (13.62386°N, 85.81961°W; WGS 84); elev. 245 m; 6 February 2014; Milton Francisco Ubeda-Olivas. A photo voucher of this individual, a juvenile measuring 86 cm in snout–vent length, is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8616; Fig. 1.). The snake was active during the day (1000 h) under the tin roof of the wooden house of Noemí Toruño, located close to a vegetated stream ca. 50 m from its confluence with Río Coco, in an area consisting of Tropical Moist Forest (Holdridge, 1967). This locality represents the first record of this species for the department of Jinotega, and the northeastern-most record of this species in Nicaragua, extending its distribution ca. 80 km N from its closest reported locality in the country (Price, 1991; Köhler, 2001).

Fig. 1. Juvenile *Senticolis triaspis* from Wiwilí, Departamento de Jinotega, Nicaragua. © Milton Francisco Ubeda-Olivas

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

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Family Dipsadidae

***Coniophanes fissidens* (Günther, 1858).** MEXICO: HIDALGO: Municipio de Tenango de Doria, near El Damo (20.327817ºN, -98.217771ºW; WGS 84) elev. 1,695 m; 20 September 2015; Leonardo Fernández-Badillo. The specimen (CH CIB 4826), deposited in the herpetological collection of the Centro de Investigaciones Biológicas, Universidad Autónoma del Estado de Hidalgo, represents a municipality record with the closest known locality ca. 7.9 km to the S (airline distance) in the vicinity of Santa Catarina, Municipio de Acaxochitlán, Hidalgo (Ramírez-Bautista et al., 2010). The snake was found in cloud forest, dead on the road from Tenango de Doria to the vicinity of San Nicolas.

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Family Dipsadidae

***Conophis lineatus* (Duméril, Bibron, & Duméril, 1854)**. NICARAGUA: JINOTEGA: Wiwilí (13.62386°N, 85.81961°W; WGS 84); elev. 245 m; 25 July 2014; Milton Francisco Ubeda-Olivas. A photo voucher of this individual is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8615; Fig. 1.). The snake was active during the day (1400 h) under a bed in the wooden house of Noemí Toruño, located close to a vegetated stream ca. 50 m from its confluence with Río Coco, in an area consisting of Tropical Moist Forest (Holdridge, 1967). This locality represents the northernmost record for this species in Nicaragua and the first record for the department of Jinotega, extending its distribution ca. 75 km N from its closest reported localities in Nicaragua (Wellman, 1963; Köhler, 2001).

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

Fig. 1. Adult *Conophis lineatus* from Wiwilí, Departamento de Jinotega, Nicaragua. © Milton Francisco Ubeda-Olivas

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Family Dipsadidae

***Diadophis punctatus* (Linnaeus, 1766).** MEXICO: HIDALGO: Municipio de Huichapan, near Jonacapa (20.445231ºN, -99.510014ºW; WGS 84); elev. 2,260 m; 9 October 2015; Francisco Callejas-Márquez. The snake was found in a patch of disturbed oak forest. The specimen (CIB 4854) is deposited in the Herpetological Collection of the Centro de Investigaciones Biológicas, Universidad Autónoma del Estado de Hidalgo. This individual represents a new municipality record, with the closest known locality ca. 39.95 km to the NE (airline distance) at El Banxu, Municipio de Ixmiquilpan, Hidalgo (Fernández-Badillo, 2008; Fernández-Badillo y Goyenchea, 2010).

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Family Dipsadidae

***Geophis sallei* Boulenger, 1894.** MEXICO: OAXACA. Municipio de Santa Catarina Juquila, Santa Catarina Juquila (16°14'18.02"N, -97°17'26.84"W; WGS 84); elev. 1,463 m; 19 June 2015; Dominic L. DeSantis, Elí García-Padilla, Vicente Mata-Silva, and Larry David Wilson. The snake was found dead on a paved street in the interior of the town, with the surrounding vegetation characterized by patches of pine-oak forest. The specimen (CIB-4872) is deposited in the herpetological collection of the Centro de Investigaciones Biológicas of the Universidad Autónoma del Estado de Hidalgo.

This individual represents a new municipality record, and extends the distribution of this species ca. 22 km NW of the closest reported locality in the vicinity of Santa Rosa, in the municipality of San Juan Lachao (Smith and Chiszar, 1992). Our locality also represents the third known locality for this species, which previously has been reported from the municipalities of San Juan Lachao (Smith and Chiszar, 1992) and Pluma Hidalgo (Smith, 1942), both located in the Sierra Madre del Sur.

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Family Dipsadidae

***Rhadinaea gaigeae* Bailey, 1937.** MEXICO: HIDALGO: Municipio de Tenango de Doria, La Viejita (20.324556ºN, -98.268137ºW; WGS84); elev. 1,860 m; 20 September 2015; José Eduardo Aguilar Bautista. The snake was found under a rock in a cattle ranch, surrounded by remnant patches of cloud forest. The specimen (CH CIB 4860) and a photo voucher (CH-CIB 45; Fig. 1) are deposited in the Herpetological Collection of the Centro de Investigaciones Biológicas, Universidad Autónoma del Estado de Hidalgo. This individual represents a new municipality record, with the closest known locality ca. 46.71 km to the SW (airline distance) in the vicinity of Presa Calicanto, Municipio de Mineral del Monte, Hidalgo (Fernández-Badillo et al*., In Press*).

Fig. 1. (A) An adult *Rhadinaea gaigeae* (CH-CIB 45) from La Viejita, Tenango de Doria, Hidalgo; and (B) detail of the head. © Leonardo Fernández-Badillo

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Family Typhlopidae

***Indotyphlops braminus* (Daudin, 1803).** MEXICO: HIDALGO: Municipio de Chilcuautla, near Tunititlán (20.241152ºN, -99.228625ºW; WGS 84); elev. 1,930 m; 4 September 2015; Arturo Archundia Cedillo. The snake was found under a rock near the Río Tula. A photo voucher (CH-CIB 046) is deposited in 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. 35.1 km to the N (airline distance) in the vicinity of Tzindejéh, Municipio de Tasquillo, Hidalgo (Hernández-Salinas and Ramírez-Bautista, 2010). It also represents the second published record for the state. When photographed, the individual appeared to be carrying young and was in a shed cycle.

Fig. 1. *Indontyphlops bramminus* (CH-CIB 46) from near Tunititlan, Chilcuautla, Hidalgo. © Leonardo Fernández-Badillo

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Family Viperidae

***Agkistrodon bilineatus* (Günther, 1863).** MEXICO: OAXACA. Municipio de San Juan Lachao, Rio Oriente (16°9'15.74"N, -97°6'32.50"W; WGS 84); elev. 650 m; 20 June 2015; Dominic L. DeSantis, Elí García-Padilla, Vicente Mata-Silva, and Larry David Wilson. We found the snake (a juvenile female) dead on a paved road at 2230 h between the towns of San Juan Lachao and Luz de Luna, near Río Oriente. We preserved only the skin, due to the poor condition of the specimen (Fig. 1). The habitat in the area can be characterized as moderately disturbed premontane wet forest. The specimen (CIB-4831) is deposited in the herpetological collection of the Centro de Investigaciones Biológicas of the Universidad Autónoma del Estado de Hidalgo.

This individual represents a new municipality record for the state of Oaxaca, and fills a significant gap in the distribution of this species along the Pacific coast of Oaxaca. The locality is ca. 72 km NE of a recent record from the vicinity of El Azufre, in La Tranca, Parque Nacional Lagunas de Chacahua (García-Grajales and Buenrostro-Silva, 2011) and ca. 200 km SW of several localities in the Isthmus of Tehuantepec (Campbell and Lamar, 2004). Our locality also represents the first record of *A. bilineatus* from the Sierra Madre del Sur, in Oaxaca.

Fig. 1. A juvenile female *Agkistrodon bilineatus* (CIB CIB-4831) found dead on a paved road at San Juan Lachao, Municipio de San Juan Lachao, Oaxaca, Mexico. © Vicente Mata-Silva

Acknowledgments.—A special thanks to Honésimo Velasco Cruz for his invaluable assistance in the field, to Miguel Ángel Ramírez Martínez (Presidente del Comisariado de Bienes Comunales San Juan Lachao, Juquila, Oaxaca) and his cabinet members for their approval and support while visiting the municipality of San Juan Lachao, to Raciel Cruz Elizalde and Christian Berriozabal-Islas for logistical support, and to Irene Goyenechea Mayer Goyenechea for providing the specimen number. Collecting permit (SGPA/DGVS/04149/15) was issued by SEMARNAT to ARB.

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Family Viperidae

***Atropoides nummifer* (Rüpel, 1845).** MEXICO: HIDALGO: Municipio de Tenango de Doria, El Damo (20.327967ºN, -98.217186ºW; WGS 84); elev. 1,678 m; 8 August 2015; Pánfilo Benito-Clemente. A resident in a cattle ranch killed the snake. The specimen (CH CIB 4824) is deposited in the herpetological collection of the Centro de Investigaciones Biológicas, Universidad Autónoma del Estado de Hidalgo. It represents a municipality record, with the closest known locality ca. 21.08 km to the NE (airline distance) between the vicinities of Aztlán and Huehuetla, Municipio de Huehuetla, Hidalgo (Fernández-Badillo et al., *In Press*).

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Family Viperidae

***Bothrops asper* (Garman, 1883).** MEXICO: SAN LUIS POTOSÍ. Ejido San Nicolás de los Montes, Municipio de Tamasopo (22°07'11.65"N, -99° 25'30.34"W; WGS 84); elev. ca. 700 m; 1 June 2007; Emiliano Méndez-Salinas and Dulce M. Ávila-Nájera. The individual was found swimming in Río San Nicolás, in an area consisting of tropical deciduous forest. A photograph of this specimen is deposited at the University of Texas at El Paso Biodiversity Digital Collection (Photo Voucher UTEP G-2015.15). This individual represents a new municipality record, with the closest known locality ca. 30 km to the NE in the vicinity of El Salto, Municipio El Naranjo (KU KUH 24030; www.vernet.org, accessed 8 December 2015). Lemos-Espinal and Dixon (2013: 300) list the same locality but did not provide a specimen catalog number, and thus it is unclear if they referred to an additional specimen or to the one indicated in www.vernet.org.

Fig. 1. *Bothrops asper* (UTEP G-2015.15) from Ejido San Nicolás de los Montes, Municipio de Tamasopo, San Luis Potosí, Mexico. © Dulce M. Ávila-Nájera

Acknowledgments.—A special thanks to Emiliano Méndez-Salinas and Dulce M. Ávila-Nájera for field assistance and providing the photograph. Arthur Harris kindly provided the photo voucher number.

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Family Viperidae

***Crotalus lepidus* Kennicott, 1861.** MEXICO: NUEVO LEÓN: Municipio de Rayones, near Rayones (25°01'42.67"N, 100°00'36.65"W; WGS 84); elev. 1,100 m; 16 September 2008; Elí García-Padilla. The individual, a neonate (Fig. 1), was found coiled while basking on a paved road, with the surrounding habitat consisting of thorn forest and pine-oak forest with a rocky substrate. A photo voucher of the snake is deposited at the University of Texas at El Paso Digital Collection (UTEP G-2015.14). This voucher represents the first definite record for this municipality (see below), and fills a gap between the closest known localities, ca. 70 km to the N (airline distance) in Parque Nacional Cumbres de Monterrey (Narvaez-Torres and Lazcano-Villareal, 2013), and ca. 48 km to the SW (airline distance) in the vicinity of Ojo de Agua, near Ejido Pablillo, Galeana (Smith, 1944). Lazcano-Villareal et al. (2010) included the municipality of Rayones in the distribution of *C. lepidus*, but did not provide specific information (e.g. locality, catalog number, date, coordinates, elevation).

Fig. 1. A neonate *Crotalus lepidus* (UTEP G-2015.14) found near Rayones, Municipio de Rayones, Nuevo León, Mexico. © Elí García-Padilla

While searching for rattlesnakes in this area, EGP observed that the type of microhabitat (under rocks) where *C. lepidus* often is found also is occupied by the lizard *Lepidophyma sylvaticum*, which perhaps constitutes part of its diet.

Acknowledgments.—We thank Emiliano Méndez-Salinas, Anwar Medina-Villarreal and Patricia Guerrero for field assistance. Arthur Harris kindly provided the photo voucher number.

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Family Viperidae

***Crotalus triseriatus* (Wagler, 1830).** MEXICO: HIDALGO: Municipio de Agua Blanca de Iturbide, Chichicaxtle (20.365962ºN, -98.374988ºW; WGS 84); elev. 2,206 m; Sara Hernández-Hernández and Guillermina Sánchez-España. Four individuals were found at this locality. A neonate was found on 23 May 2014, and died two days later. Another individual, an adult killed by a local resident, was found on 3 August 2015. Two other individuals, both adults, were found on 11 September 2015; one was dead and one was alive, and were encountered 263 and 373 m, respectively, to the S of the neonate's locality. All of the snakes were found in pastures. The three dead snakes are deposited in the herpetological collection of the Centro de Investigaciones Biológicas, Universidad Autónoma del Estado de Hidalgo (CH CIB 4820, 4821, 4825), and the live individual was released at the collecting site. These individuals represent a new municipality record, with the closest known locality ca. 33.4 km to the SE (airline distance) in the vicinity of Los Reyes, Municipio de Acaxochitlán (Cruz-Elizalde, 2010; Ramírez-Bautista et al., 2014).

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Range extensions and new departmental records for amphibians and reptiles in Honduras

In Central America, the country of Honduras ranks among the leaders in the amount of progress being made toward understanding herpetofaunal diversity (McCranie, 2015). In recent years, several studies have augmented the geographical distribution of amphibians and reptiles in various departments of the country (Espinal et al., 2014a, b; Espinal and Solís, 2015; McCranie and Solís, 2013; McCranie et al., 2013, 2014; McCranie, 2014; McCranie and Valdéz-Orellana, 2014). Some areas of Honduras, however, remain poorly sampled in terms of biological diversity (Townsend et al., 2013), and in recent times the rate of deforestation has accelerated to the point where little pristine forest remains in the country, which has caused dramatic population declines in the herpetofauna and the disappearance of several species (Wilson and McCranie, 2004; McCranie, 2015).

During recent field surveys, we discovered several new herpetofaunal departmental records and range extensions from the departments of Francisco Morazán, Santa Bárbara, and Atlántida (Fig. 1). In August of 2015 we conducted field observations in the Municipio de Cedros, community of Agalteca, Francisco Morazán; in September of 2015 in the Municipio de Quimistán, communities of Las Delicias and El Caserío Santa Lucia, Santa Bárbara; and in October of 2015 in the Municipio de El Porvenir, Parque Nacional Pico Bonito, Atlántida. The habitat in the department of Francisco Morazán was a cattle farm that formerly

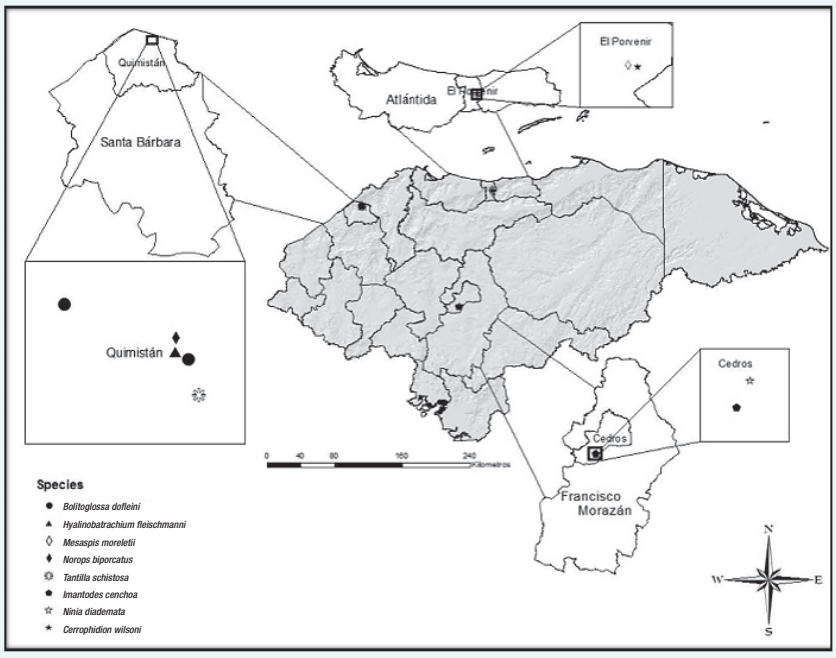

Fig. 1. Map of Honduras showing new localities for the amphibians and reptiles in the departments of Francisco Morazán, Santa Bárbara, and Atlántida.

consisted of Pine-Oak Forest; in the department of Santa Bárbara the habitat was a coffee plantation and deforested areas that formerly encompassed of Premontane Wet Forest; and in the department of Atlántida it was composed of Premontane Moist Forest (Holdridge, 1967; Savage, 2002). Herein we report eight distributional records (one salamander, one frog, two lizards, and four snakes) encountered during our surveys. We deposited digital vouchers at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC), and recorded geographical coordinates for the localities with a Gamin GPS, using map datum WGS 84.

Order Caudata
Family Plethodontidae

***Bolitoglossa dofleini* (Werner, 1903).** SANTA BÁRBARA: Municipio de Quimistán, Las Delicias (15°29'17.5"N, 88°19'19.4"W); elev. 771 m; 3 September 2015; José Mario Solís. One individual (UTADC-8618; Fig. 2A) was observed at 2145 h on a leaf ca. 1 m from the ground. SANTA BÁRBARA: Municipio de Quimistán, El Caserío Santa Lucía (15°29'38.6"N, 88°20'09.9"W); elev. 894 m; 6 September 2015; Rony E. Valle. This individual (UTADC-8619; Fig. 2B), which displayed an aberrant coloration, was found at 2000 h walking on a branch ca. 1.5 m above the ground. McCranie and Wilson (2002: 115) reported the dorsal coloration of two large females of this species as follows: dorsal surfaces of head, body, and limbs mottled rust-red and tan with dark brown, scattered, irregular spots; dorsal surface of tail mottled rust-red and dark brown. They also reported the following coloration for a subadult female: purplish-brown dorsal surfaces with cream, irregular blotches laterally on the body and dorsally and laterally in the tail. The latter coloration is similar to that in Fig. 2A. Following the color guide of Smithe (1975), the coloration of the aberrant individual (Fig. 2B) is as follows: dorsal surfaces of head, body, and limbs mottled with flame scarlet (15) and tan, and with scattered dark grayish-brown (20) irregular spots; dorsal surface of tail mottled with flame scarlet (15) with scattered burnt orange (116), with white and fuscous (21) irregular spots. The cause of this aberrant coloration is unknown. These salamanders represent a new departmental record and a range extension, with the closest known locality ca. 13.4 km ENE near La Fortuna, in the department of Cortés (McCranie and Castañeda, 2007).

Order Anura
Family Centrolenidae

***Hyalinobatrachium fleischmanni* (Boettger, 1893).** SANTA BÁRBARA: Municipio de Quimistán, Las Delicias (15°29'20.4"N, 88°19'24.8"W); elev. 737 m; 3 September 2015; José Mario Solís and Rony E. Valle. We found several males calling in trees and on high vegetation along the main river and in a small stream. Two individuals (UTADC-8620; Fig. 2C) were calling from a tree at a height of ca. 3 m above the ground. This population represents a new departmental record and a range extension for this species, with the closest known locality ca. 69.8 km SSE at El Jaral, in the department of Cortés (McCranie and Castañeda, 2007).

Order Squamata
Family Anguidae

***Mesaspis moreletii* (Boccourt, 1872).** ATLÁNTIDA: Municipio de El Porvenir, Parque Nacional Pico Bonito (15°39'20.6"N, 86°53'14.4"W); elev. 1,536 m; 10 October 2015; Luis A. Herrera, José Mario Solís, and José Concepción. A single individual (UTADC-8621; Fig. 2D) was observed in vegetation on the ground. This voucher represents the first record for this species in the Cordillera Nombre de Dios and represents a new departmental record, with the closest known locality ca. 144 km WSW at Cerro Cusuco, Parque Nacional Cusuco, in the department of Cortés (Townsend and Wilson, 2008).

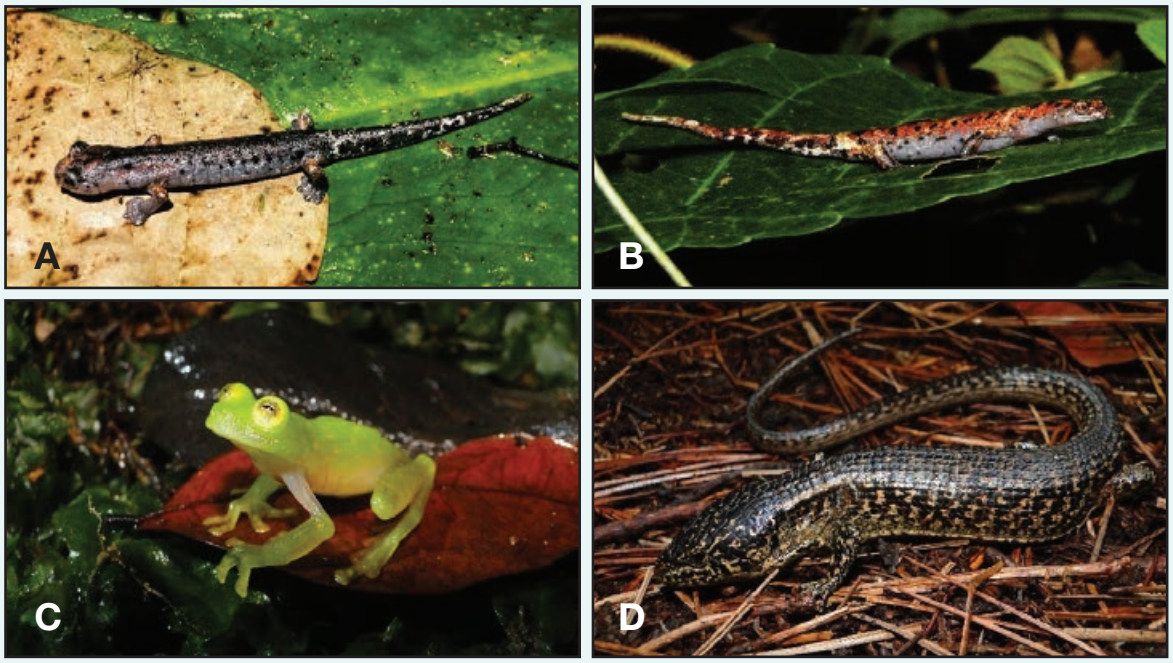

Fig. 2. (A) *Bolitoglossa dofleini* from Municipio de Quimistán, Las Delicias, Santa Bárbara; (B) *B. dofleini* from Municipio de Quimistán, El Caserío Santa Lucía, Santa Bárbara; (C) *Hyalinobatrachium fleischmanni* from Municipio de Quimistán, Las Delicias, Santa Bárbara; and (D) *Mesaspis moreletii* from Municipio de El Porvenir, Parque Nacional Pico Bonito, Atlántida.
© José M. Solís (A, C, D) and Rony E. Valle (B)

Family Dactyloidae

***Norops biporcatus* (Wiegmann, 1834).** SANTA BÁRBARA: Municipio de Quimistán, Las Delicias (15°29'26.0"N, 88°19'24.4"W); elev. 781 m; 3 September 2015; José Mario Solís. One individual (UTADC-8622; Fig. 3A) was found at night sleeping on a palm leaf in a coffee plantation at a height of ca. 3 m from the ground, and 5 m from a stream. This voucher represents a new departmental record and a range extension for this species, with the closest locality ca. 81.2 km SSE at Aldea Los Pinos, Parque Nacional Cerro Azul Meambar, in the department of Cortés (McCranie and Köhler, 2015).

Family Colubridae

***Tantilla schistosa* (Bocourt, 1883).** SANTA BÁRBARA: Municipio de Quimistán, Las Delicias (15°29'03.5"N, 88°19'15.2"W); elev. 904 m; 4 September 2015; José Mario Solís. A single snake (UTADC-8623; Fig. 3B) was found dead at 1215 h on a dirt road. This voucher represents a new departmental record and a range extension for this species, with the closest locality 11 km ESE at Campamento Guanales, Parque Nacional Cusuco, in the department of Cortés (Townsend and Wilson, 2008; McCranie, 2011).

Family Dipsadidae

***Imantodes cenchoa* (Linnaeus, 1758).** FRANCISCO MORAZÁN: Municipio de Cedros, Agalteca (14°25'07.3"N, 87°14"52.5"W); elev. 770 m; 21 August 2015; José Mario Solís. One individual (UTADC-8624; Fig. 3C) was found at night on a tree in a disturbed patch of forest, at a height of ca. 2 m above the ground. This voucher represents a new departmental record and range extension for this species, with the nearest locality ca. 88.6 km NW at El Carrizal, Taulabe, in the department of Comayagua; this species also has been observed and collected in the department of Choluteca (McCranie, 2011; Espinal et al., 2014b).

***Ninia diademata* (Baird and Girard, 1853).** FRANCISCO MORAZÁN: Municipio de Cedros, Agalteca (14°25'21.9"N, 87°14'45.4"W); elev. 765 m; 21 August 2015; José Mario Solís. One individual (UTADC-8625; Fig. 3D) was found at night moving on the ground in a disturbed patch of forest, 3 m from a stream. This voucher represents a new departmental record, with the nearest locality 90 km NW near Lago de Yojoa, in the department of Comayagua, as well as the southernmost distribution record for this species (McCranie, 2011).

Family Viperidae

***Cerrophidion wilsoni* (Jadin, Townsend, Castoe and Campbell, 2012).** ATLÁNTIDA: Municipio de El Porvenir, Parque Nacional Pico Bonito (15°39'14.4"N, 86°52'43.0"W); elev. 1,734 m; 10 October 2015; José Concepción, José Mario Solís, and Luis A. Herrera. A single individual (UTADC-8626; Fig. 3E) was found active at 1010 h on a sunny day; the snake attempted to escape by hiding in vegetation. This individual represents the second known population of this specie in the Cordillera Nombre de Dios, with the nearest locality ca. 53.7 km SW in the foothills of the same mountain range, in the department of Yoro (McCranie, 2011).

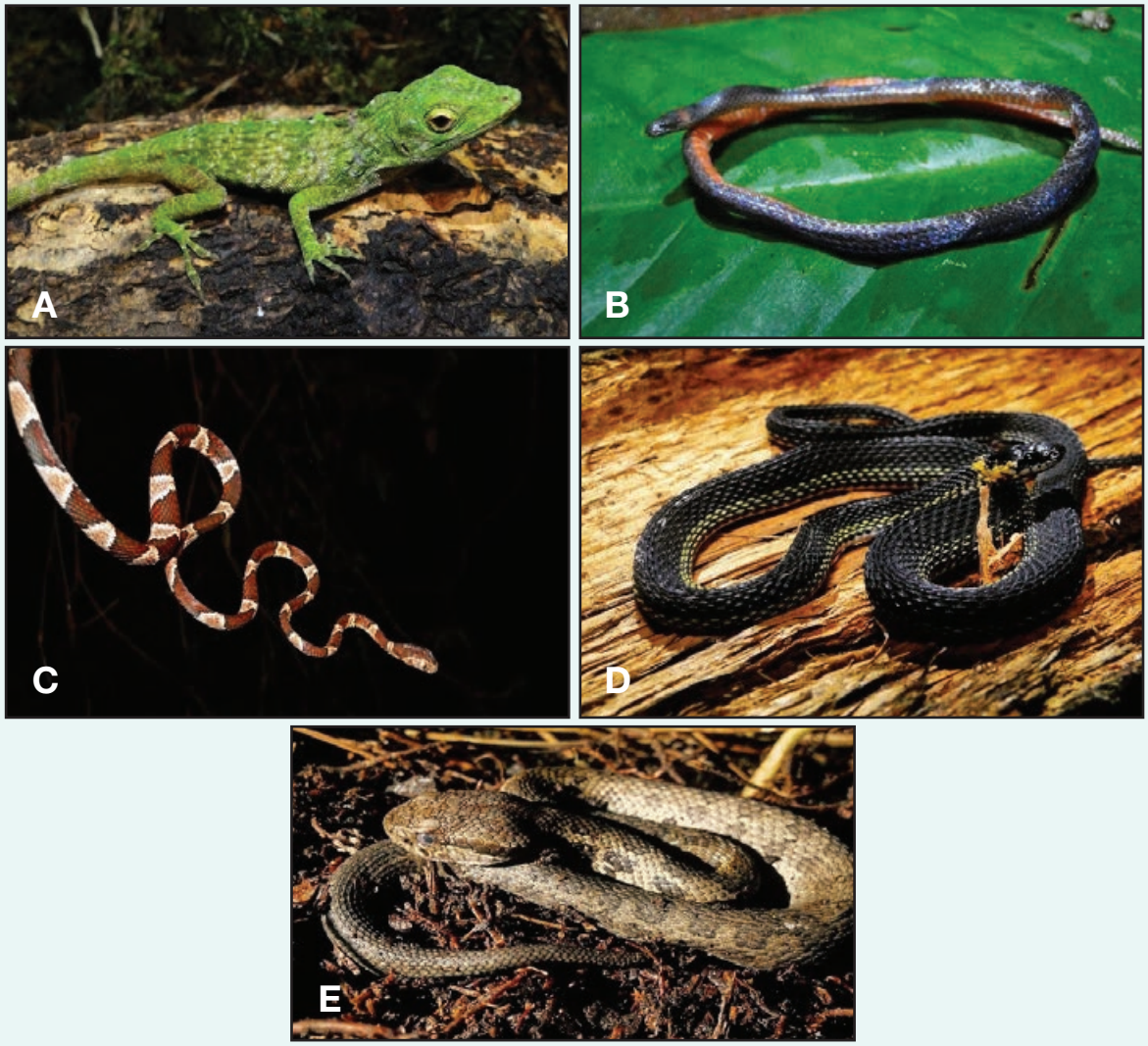

Fig. 3. (A) *Norops biporcatus* from Municipio de Quimistán, Las Delicias, Santa Bárbara; (B) *Tantilla schistosa* from Municipio de Quimistán, Las Delicias, Santa Bárbara; (C) *Imantodes cenchoa* from Municipio de Cedros, Agalteca, Francisco Morazán; (D) *Ninia diademata* from Municipio de Cedros, Agalteca, Francisco Morazán; and (E) *Cerrophidion wilsoni* from Municipio de El Porvenir, Parque Nacional Pico Bonito, Atlántida. © José M. Solís

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MISCELLANEOUS NOTES

Bolitoglossa platydactyla. **New elevational record and habitat preferences.** *Bolitoglossa platydactyla* (Gray, 1831) is a lungless salamander endemic to Mexico, and is considered part of the *Bolitoglossa mexicana* group (Wake and Lynch, 1976). This species is distributed from southern Tamaulipas and eastern San Luis Potosí southward through Hidalgo, Puebla, Oaxaca, and Veracruz to northeastern Chiapas. Its elevation has been reported as from 140 to 1,200 m (Canseco-Márquez and Gutiérrez-Mayén, 2006; Ramírez-Bautista et al., 2014); however, Cruz-Elizalde et al. (2011) reported a maximum elevation of 1,510 m for a specimen from the state of Hidalgo.

On 22 March 2015, during a herpetofaunal field study conducted at Tlacuilolan, Municipio de Xico, Veracruz (19°24.99'N, 97°3.469'W; WGS 84) we found two *B. platydactyla* under a rotting log in a grazing area surrounded by tropical montane cloud forest at an elevation of 1,726 m. One of the salamanders measured 180 mm in total length (Fig. 1), and we deposited a photo voucher (IBH-RF 287) of this individual in the Colección Nacional de Anfibios y Reptiles, Instituto de Biología, Universidad Nacional Autónoma de México.

Bolitoglossa platydactyla is a terrestrial and nocturnal species that inhabits forested areas with high humidity, where it has been found in bromeliads, along the base of wide trees, under rocks and logs, and along the banks of streams (Ramírez-Bautista et al., 2004); it also has been found in pastures, agricultural areas, and banana and coffee plantations (Parra-Olea and Wake, 2008; Murrieta-Galindo et al., 2013; Ramírez-Bautista et al., 2014). This species is considered as Near Threatened (NT) by the IUCN, and is listed in the category of subject to special protection (Pr) by Norma Oficial Mexicana NOM-059-SEMARNAT 2010. Because *B. platydactyla* apparently is threatened by factors that could negatively impact its viability, such as climate change, more studies are necessary to evaluate how this and other species might be able to adapt to other types of habitats.

Fig. 1. An individual of *Bolitoglossa platydactyla* (IBH-RF 287) photographed in life at Tlacuilolan, Municipio de Xico, Veracruz, Mexico (coin diameter = 28 mm). © Paola Vargas

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Predation of *Rhaebo haematiticus* (Anura: Bufonidae) by *Leptodeira septentrionalis* (Serpentes: Dipsadidae) in Costa Rica

The Truando Toad, *Rhaebo haematiticus* (Cope, 1862), is distributed from the Caribbean slopes of eastern Honduras to northern Colombia, and on the Pacific slopes from Costa Rica to central Ecuador (Savage, 2002). In Costa Rica, this species is widely distributed at elevations from near sea level to 1,300 m on the Caribbean and Pacific slopes and the Meseta Central (Savage, 2002). Although this toad is relatively abundant, little information is available on its ecology. *Rhaebo haematiticus* is known to inhabit the forest floor and to prey primarily on ants, and is an explosive breeder in small pools along streams from early to the middle of the wet season (Scott, 1983; Lieberman, 1986; Savage, 2002). Little else in know about the natural history of this species, including its potential predators.

Toads are known to have evolved a suite of chemical defenses that include dermal glands on their skin and greatly enlarged parotoid glands behind the head (Hayes, 1989; Denton and Beebee, 1991; Jared et al. 2009). These chemical defenses can be extremely toxic, and are capable of immobilizing or result in the death of such potential predators as snakes (Licht and Low, 1968; Phillips et al., 2003). The parotoid glands of *R. haematiticus* are elongated and especially large, and extend almost the length of the head (Savage, 2002), and thus can be an indicator of their relative toxicity (Phillips and Shine, 2005). Based on the size of these glands it can be inferred that *R.*

haematiticus has strong predator deterrent toxins, especially because to our knowledge there are no observed reports of predation on this species (e.g. Savage, 2002; Solórzano, 2004).

The Northern Cat-Eyed snake, *Leptodeira septentrionalis* (Kennicot, 1859), is distributed from extreme southern Texas, United States, southward to Peru, and its range overlaps extensively with that of *R. haematiticus* (Savage, 2002). In Costa Rica *L. septentrionalis* is an abundant species that occurs at elevations from near sea level to about 1,500 m, mostly in humid habitats on the Caribbean and Pacific slopes (Solórzano, 2004). Frogs and toads constitute most of diet of *L. septentrionalis*, but this species also is known to consume the eggs of treefrogs and dendrobatid frogs, and occasionally lizards (Duellman, 1958; Savage, 2002; Stynoski et al., 2014). The presence of toads in the diet of *L. septentrionalis* suggests a capability of consuming toxic prey items (Vargas-Salinas and Aponte-Gutiérrez, 2013). Considering the wide range of anuran species consumed by *L. septentrionalis* and its large distributional overlap with *R. haematiticus*, it is surprising that no reports of predation are available by this snake on this toad.

During an expedition to the Caribbean slopes of the Cordillera de Talamanca, Provincia de Limón, on 6 March 2015 we observed an adult female *L. septentrionalis* preying on an adult male *R. haematiticus* (Fig. 1) at the confluence of the Río Lari and the Río Pare (9°26'0.64"N, 83°2'55.21"W; WGS 84; elev. 390 m). We observed this event at 1810 h near a series of rocky pools located about 15 m from the western bank of the Río Lari. The snake was perched on a small shrub ca. 60 cm above the ground, and was holding the head of the toad in its mouth (Fig. 1a). We are not aware if the toad was captured on the ground or on low vegetation, but assume that it was captured while sleeping on low vegetation near the stream because this is a common behavior in this species (M. Ryan, unpublished), and it seems unlikely that the snake would have carried such a heavy prey item onto a higher perch. At 1900 h, 50 min after we started observing the event, the snake had ingested ca. 75% of the toad's body to near the groin (Fig. 1b), and after 118 min it finished swallowing the toad. At this point, we captured the snake to preserve it and document this rare event. Shortly after placing the snake in a collecting bag, however, it regurgitated the toad; we were uncertain if the regurgitation was caused by a reaction to the toad's toxins or because of the stress from capture. To rule out regurgitation from toxicity we left the toad and snake in the bag until morning, because snakes are known to re-ingest prey after regurgitation. The following morning we discovered that the snake had consumed the toad, and by that time it had advanced onto the snake's digestive tract. We then euthanized the snake and fixed it in formalin, and deposited it in the herpetological collection of Museo de Zoología, Universidad de Costa Rica (UCR 22313).

The *L. septentrionalis* was a gravid female that contained seven nearly completely developed eggs; it measured 975 mm in total length, which approached the maximum known total length of the species (1,055 mm; Savage, 2002). The snake and toad weighed 146.64 g, and without the toad the snake weighed 132.0 g. The toad measured 62.0 mm in body length and weighed 14.64 g, representing 11.1% of the snake's total mass. At the time of dissection the skin of the head and forelimbs of the toad were highly digested, and for this reason the remains of the toad were discarded.

The consumption of toxic prey can have important costs to the predator that include: a reduction of the predator's locomotion performance; more time handling and consuming prey; and lower energetic benefits compared to non-venomous frogs of equal size (Llewelyn et al., 2009). Because we did not observe the snake after it had ingested its prey, we are unaware if its locomotor performance was affected. Nonetheless, it took the snake nearly two hours (118 min) to consume the toad, and during this time it was exposed to increased risk from predation. The length of time it took the *L. septentrionali*s to swallow the *R. haematiticus* is similar that reported by Vargas-Salinas and Aponte-Gutiérrez (2013), who indicated that it took 113 min for a *L. septentrionali*s to swallow an individual of the toad *Rhinella humboldti*. This contrasts strongly with our unpublished observations of swallowing time of non-toxic anuran prey by *L. septentrionali*s, which includes similar-sized treefrogs (*Agalychnis callidryas* and *Smilisca phaeota*) at from 2 to 5 min. Like in most other snakes, non-toxic prey consumption by *L. septentrionalis* takes fewer than 2 min (e.g., see www.youtube.com/watch?v=XAYuV2KgBMs; accsessed 26 April 2015). Our observation supports that of Llewelyn et al. (2009), who found that the consumption of toxic prey can increase the consumption time. Whether the locomotor performance of *L. septentrionalis* is impaired after consuming *R. haematiticus* can be determined through laboratory feeding and locomotor trials.

Herein we report the first record of *L. septentrionalis* preying on *R. haematiticus*, and note that it took the snake a significant amount of time to consume such a toxic prey item. Considering the increased risk of predation to the snake during the swallowing process might explain why such an observation has not been reported. This observation is important because it suggests that *L. septentrionalis* has some ability to tolerate toad skin toxins, even at a cost of increased swallowing time. Such an event may be a rare occurrence and might happen when a snake's preferred prey items are not abundant, or this simply might have been an opportunistic feeding event.

Fig. 1. An adult female *Leptodeira septentrionalis* feeding on an adult male *Rhaebo haematiticus*: (A) when it was first sighted; and (B) 50 minutes later. © Erick Arias

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Crocodylus acutus in Panama: a status report

The American Crocodile, *Crocodylus acutus*, is the most widely distributed of the Neotropical crocodiles (Thorbjarnarson, 2010). Based on information provided by the International Union for the Conservation of Nature and Natural Resources (IUCN Red List; www.iucnredlist.org), this species is one of the three most threatened crocodilians in the Americas, and has been assessed as Vulnerable (Ponce-Campos et al., 2012). This species also is included in Appendix I of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), except for Cuba where it is listed in Appendix II (CITES, 2012). At the country level, *C. acutus* is considered as Critically Endangered in Colombia (Rodríguez, 2002), Ecuador (Carvajal et al., 2005), and Peru (National Decree 034-2004-AG), and as Endangered in Panama (resolution No. AG–0051-2008), Venezuela (Rivas et al., 2012), and the United States (Mazzotti et al., 2007). In contrast, Mexico has listed this species under the category of Special Protection (NOM-059-SEMARNAT-2010), whereas in Cuba *C. acutus* is not listed in any of the threatened categories because the country harbors one of the largest and healthiest populations in its range (Larriera et al., 2008). Based on another conservation measure, the Environmental Vulnerabilty Score (EVS), Johnson et al. (2015) determined an EVS of 14 for *C. acutus* in Central America, placing this species at the lower end of the high vulnerability category.

Presently, the governments, national agencies, and researchers of only a few countries are providing support for conservation planning and management measures for *C. acutus* (Thorbjarnarson, 2010; Balaguera-Reina et al., 2015a; Venegas-Anaya, 2015a), which is of concern for the potential survival of at least some populations of this species. To determine where such problems might exist, clear strategies to assess each region's conservation plans must be made a priority. Our aim herein is to present an overview of the current status of *C. acutus* in Panama, including gaps in our knowledge of the biology of this species in the country, and to comment on research priorities based on a review of the literature.

Reports on the presence of *C. acutus* in Panama's bays and most rivers along the Pacific coast, in provinces from Panamá to Chiriquí, date back to the late 19th century; these reports also contained information on conflicts

between crocodiles and cattle-farmers, and the cultural uses (medical and religious) for *C. acutus* (Anonymous, 1872). Subsequently, newspaper articles and books mostly provided information on hunting activities and the animal trade (Anonymous, 1894, 1907, 1909; Abbot, 1914; Wood, 1930). Hunting crocodilians was a major diversion for people working on the Panama Canal; a report by Grier (1908) noted that eight *C. acutus* were killed (maximum length 21 feet [6.4 m]) during expeditions to the mouth of the Río Grande.

In the following years, Swanson (1945) reported killing a crocodile that measured 10 feet 8 inches [3.25 m] along the Río Cabra (Fig. 1), the largest individual he had taken in 25 years of collecting. About the same time, Breder (1946) reported *C. acutus* as abundant in the lower and middle Río Chucunaque, in the province of Darién (Fig 1.), where he estimated the length of the largest individuals at 18–20 feet (5.5–6.1 m); he also reported finding a crocodile nest with 46 eggs in April, and later that month encountered groups of newly-hatched crocodiles.

Swanson (1945) also noted that in 1942 *La Estrella de Panamá* (Panama's oldest newspaper) provided an account of a crocodilian attacking and killing a 10-year-old child. Winner (2007a, b) reported two cases of fishermen being attacked by *C. acutus*, one at the mouth of the Río Caimito (victim survived) and another (a fatal attack) in the Panama Canal Zone on the Pacific coast; he also indicated that at least two other fatal attacks had occurred in 2004 and 2007, one in Lago Gatún and the other along the coast in Panama City. On the Caribbean coast, Mendieta and Duarte (2009) reported a fatal attack by *C. acutus* on the Río Sixaola, in the province of Bocas del Toro. The most recent report, documented in the media in 2013, was a fatal attack on the Río Cañazas, in the area of Chepo. Reports of crocodile-human conflicts are not restricted to attacks on humans, as accounts of crocodiles feeding on domesticated species and pets also have appeared (Anonymous, 1998). Unfortunately, to date a comprehensive database for crocodile attacks on humans is not available at the national level.

Sporadic crocodile research, primarily involving herpetological records and the collection of specimens, occurred in such places as the Archipielago de Las Perlas, Bahía de Panama, and Lago Gatún (Cochran, 1946; Neal, 2007; Houlihan, 2013). Powell (1971) documented the hide trade, management, and human utilization of *C. acutus*, and Rand and Troyer (1980) reported parental care observations at Lago Gatún, suggesting that past hunting selectively eliminated adults that protected the young. Collectively, Dugan et al. (1981), Páez and Bock (1988), and Bock and Rand (1989) provided evidence of predation and nesting interactions of crocodiles with Green Iguanas (*Iguana iguana*), as well as the effects of these interactions on the reproductive success of *C. acutus*. Using telemetry at Lago Gatún, Rodda (1984) reported dispersal movements in hatchling *C. acutus*. Additionally, Obaldia et al. (1990) provided veterinary information, as they reported the first case of mesothelioma in *C. acutus*, and Venegas-Anaya (1992, 1995, 1998) described the nesting ecology of this species in captivity, as well as first medical cases of nutritional secondary hyperparathyroidism with fibrous osteodystrophy.

Although detailed studies on the population ecology of *C. acutus* in Panama are not available, anecdotal information on populations in the country was included in the assessment of regional habitat conservation priorities for this species (Thorbjarnarson et al., 2006; Fig. 1). Although this study represents the most detailed information currently available on the distribution of *C. acutus* in Panama, range assessments must be validated "in the field" throughout the entire country in order to determine the true conservation status of this species. Thorbjarnarson et al. (2006) highlighted two areas on the Caribbean (the Lago Gatún reservoir [Bahía de Panama-este] and Laguna de Chriquí) and five on the Pacific (Isla de Coiba, Punta Manzanillo, Bahía Charco de Azul, Bahía Montijo, and Bahía de Panama [oeste]) as relevant areas for developing Crocodile Conservation Units (CCUs).

Since 2009, a comprehensive study on the biology of *C. acutus* has been taking place at Parque Nacional Coiba (PNC) and its continental buffer zone. The goal of this project is to understand the natural history of this species by comparing insular and mainland localities, assessing aspects of population ecology (Venegas-Anaya et al., 2015), population genetics (Garcia-Jimenez, 2010; Garcia-Jimenez et al., 2010; Bashyal et al., 2010; Bashyal, 2012; Venegas-Anaya, 2013), and reproductive ecology (Balaguera-Reina et al., 2015b). To date, the main results of this project are as follows:

(1) An initial estimated size of 164 individuals on Isla Coiba and 21 in the PNC buffer area, with a relatively equal female: male ratio in both areas based on captured animals; an apparent lack of adults in the PNC buffer area that could result from habitat modification or constant human-mediated disturbance; and differences in the occurrence of individuals in a variety of landscape units based upon age groups, with juveniles being habitat generalists compared to sub-adults and adults (Venegas-Anaya et al., 2015).

(2) The reproductive ecology of these populations is more similar to that of insular Caribbean populations than that of mainland populations, with a reduction in the number of eggs and size of the hatchlings, which might result from a smaller minimum reproductive size on islands. Parental care apparently is reduced on Isla de Coiba, possibly due to human-related disturbances, which along with the conservation status of nursery areas on this island, strongly is affecting hatchling survival (Balaguera-Reina et al., 2015b).

(3) Genetically, a model-based clustering analysis revealed the presence of three spatially overlapping genetic clusters on Isla de Coiba (north and south) and the PNC buffer area; each of these clusters were comprised of one mainland population and at least one island population, suggesting that there is either some gene flow between the populations or retention of an ancient polymorphism (Bashyal, 2012).

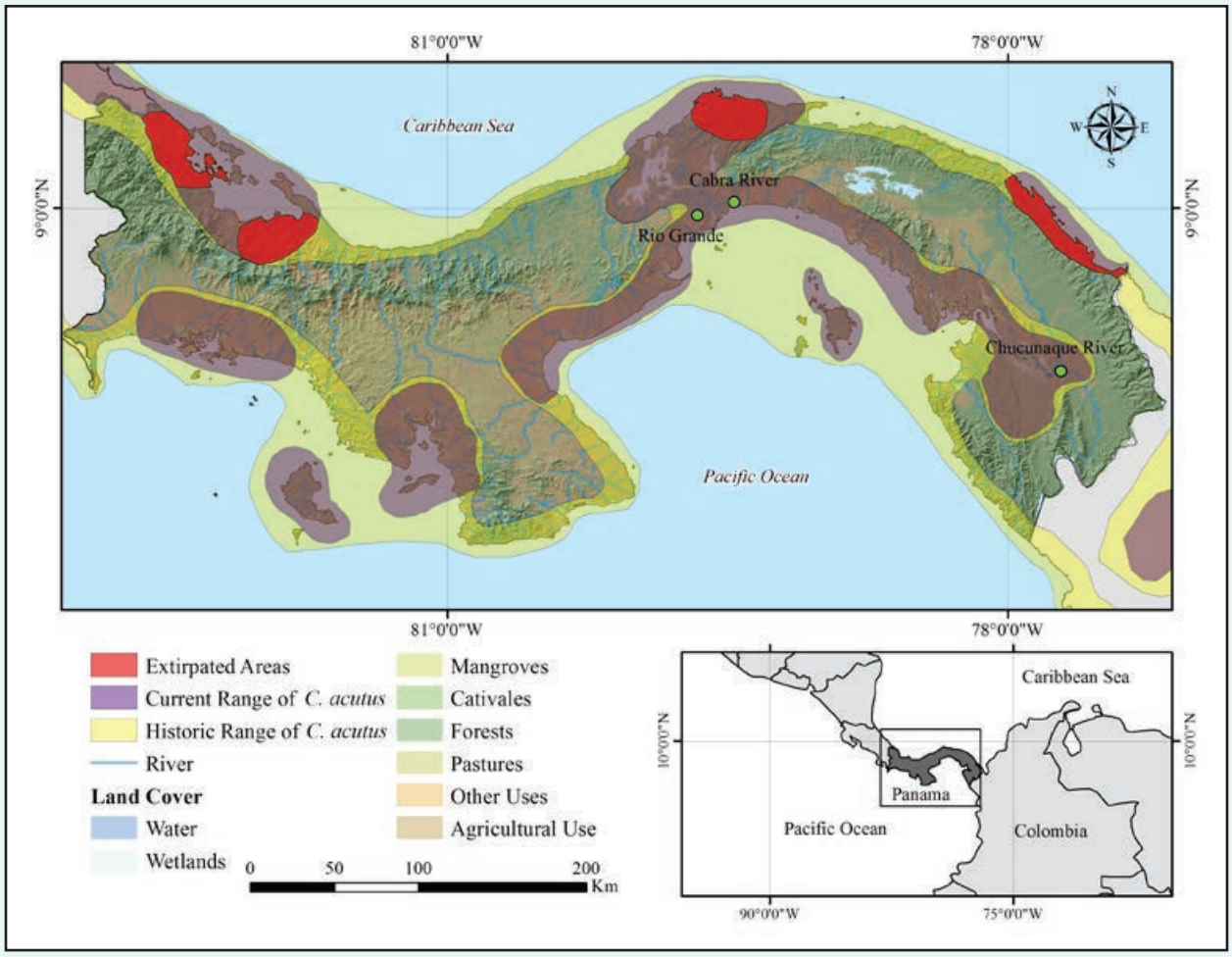

Fig. 1. Historical and current distribution of *Crocodylus acutus* in Panama revised from the multi-criteria analysis in Thorbjarnarson et al. (2006) (datum WGS 84; pers. comm.). We derived this zoom-in approximation from a large-scaled analysis of the entire range of *C. acutus*. Considerable fieldwork is necessary to improve the accuracy and validate these polygons. Green dots represent areas from where *C. acutus* was reported historically.

These studies not only increased the genetic and ecological database of the *C. acutus* in Panama, but also increased our understanding of the biogeographic history and phylogenetic systematics of Neotropical Crocodylia (Venegas-Anaya, 2000, 2001, 2015b; Weaver et al., 2008; Bashyal et al., 2014; Venegas-Anaya et al., 2015).

Despite the above-mentioned research efforts, we still are unable to determine if changes in factors such as habitat type and/or anthropogenic incursion have had any effects (deleterious or otherwise) on *C. acutus* populations, because of the lack of information on three critical attributes (i.e., abundance, range, and habitat). The paucity of these kinds of data illustrates the need to develop an "in country" monitoring plan (as well as other countries that harbor populations of *C. acutus*) as a *major research priority* focused on assessments of the three attributes, which will allow for the collection of necessary data to generate management plans at the local, national, and regional levels.

Studies on *C. acutus* inhabiting the Caribbean coast, middle-lands, and rivers in Panama are not available, re-emphasizing the lack of information on this species at the country level. Currently, monitoring strategies in Panama are not in place, which would allow biologists to determine if populations of *C. acutus* increase, decrease, or remain stable over time. Moreover, until recently ethno-zoological relationships, hunting, and human-crocodile conflicts have not been studied scientifically. Investigating and examining two aspects (the absence of ecological information and ethno-zoological studies) is *another important research priority* necessary for generating critical baseline information to develop conservation plans for *C. acutus* in Panama.

The lack of spatial information on *C. acutus* in Panama and the overall lack of knowledge on the population attributes (i.e., nesting ecology, habitat status) have had a major impact on its recovery, as conservation plans often are based on technical information. Furthermore, the country's geographical location (Panama serves both as a "bridge" and a "filter" between Central and South American faunas) could have a regional impact in assessing the conservation status of these populations. Information on the implications of these impacts on *C. acutus* populations at the ecological and genetic levels is not available, which constitutes a *third important research priority*. Clearly, these three research priorities must be addressed, not only in Panama but also throughout the distribution of this species, to provide the necessary information and data to expedite our understanding of the natural history, ecology, and genetic conservation status of *C. acutus* populations.

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Chelonoidis carbonarius (Spix, 1824): a member of the Nicaraguan herpetofauna

The distribution of *Chelonoidis carbonarius* (Spix, 1824) encompasses the lowlands from southeastern Panama through most of the Amazon Basin southward to Río de Janeiro, Brazil, and westward to Paraguay and northern Argentina (Köhler, 2008); it also occurs in Trinidad and other islands off the coast of South America, the Virgin Islands, the Lesser Antilles (Ernst and Leuteritz, 1999; Powell et al., 2005; Henderson and Powell, 2009), the archipelago of San Andrés, Providencia, and Santa Catalina (McNish, 2011; Gómez et al., 2014), and Great Corn Island (= Isla Grande del Maíz) in Nicaragua (Villa et al., 1988; Villa, 1993). Although this attractive tortoise has not been evaluated by the IUCN, it is commercially exploited for the pet trade and in Central America has been assessed as a high vulnerability species (Johnson et al., 2015).

Villa et al. (1988) and Villa (1993) commented that people living on Great Corn Island regarded this tortoise as a native species, and considered it (as *Geochelone carbonaria*) as a member of the Nicaraguan herpetofauna. Köhler (2001), Sunyer and Köhler (2010), and Sunyer (2014), however, opted not to include *C. carbonarius* in their Nicaraguan checklists, because of the lack of published records for this species from the wild; at that time all Nicaraguan records were based on individuals maintained as pets (as *Chelonoidis carbonaria* in Sunyer and Köhler, 2010). New evidence, however, supports the existence of a wild breeding population of *C. carbonarius* in Great Corn Island, Nicaragua, and because of the presence of other mainland records that likely also constitute breeding populations herein we are including this species as a member of this country's herpetofauna.

After the publication of Villa (1993), on subsequent trips to Great Corn Island this author observed several individuals of *C. carbonarius* in the wild but never reported the information (J. Villa pers. comm. to JS, 11 August 2015). In addition, QD visited the island in September of 2004 and obtained three individuals of *C. carbonarius* that had been collected from the wild as juveniles (Fig. 1A).

On 1 January 2008, R. Dolmus Mendoza and B. Mendoza photographed an individual of *C. carbonarius* in the wild at Monumento Nacional Cañón de Somoto, Departamento de Nueva Segovia, in northern mainland Nicaragua (Fig. 1B). This individual was collected and taken to the city of León.

On 12 August 2015, MSS, MF, JGMF, and J. C. Loza found a *C. carbonarius* in the wild at Parque Nacional Volcán Masaya, Departamento de Masaya, on the Pacific versant of Nicaragua (Fig. 1C, D). The individual was

found near the main entrance to the national park (12.01306°N, 86.14231°W; datum WGS 84; elev. 298 m) inside an abandoned tractor tire along with an individual of two turtle species (*Kinosternon scorpioides* and *Rhinoclemmys pulcherrima*).

On 17 August 2015, four of us (MSS, JCL, MF, and JGMF) interviewed G. Hodgson, who brought eight individuals of *C. carbonarius* back from Great Corn Island and housed them in Managua, Barrio Los Salvadoreños, 1 km S of km 11.5 on the old road to León (12.09411°N, 86.33889°W; datum WGS 84; elev. 294 m), Departamento de Managua (Fig. 1E, F). Six of the tortoises escaped, however, and presumably moved into an adjacent abandoned hill. In 2015, the remaining pair bred in captivity and produced two neonates.

Historically, because of the lack of commercial reptile imports in Nicaragua it is difficult to determine if all the individuals of *C. carbonarius* found in mainland Nicaragua originated from Great Corn Island. For example, in 2000, a commercial animal enterprise in Masaya sold individuals of *C. carbonarius* of different sizes, but we are unaware of their number or origin. Also, we have no conclusive evidence to demonstrate whether the Great Corn Island population is native or introduced. As in other Caribbean islands, native animals could have resulted from overwater dispersal (Villa, 1993) or might have been introduced, perhaps for food by humans such as Amerindians (Dunn and Saxe, 1950; Pritchard and Trebbau, 1984; Powell et al., 2005; Vinke et al., 2008; Henderson and Powell, 2009). Molecular studies eventually might shed some light on the origin of these insular populations.

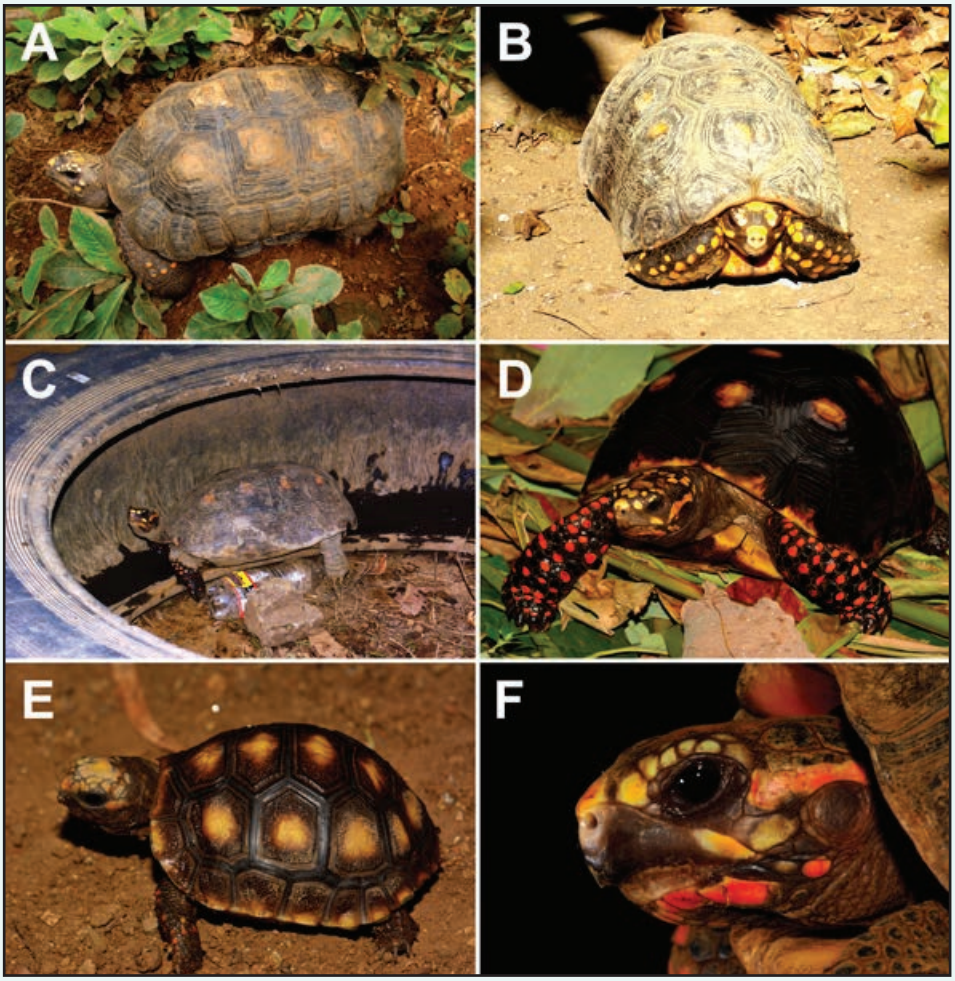

Fig. 1. Individuals of *Chelonoidis carbonarius* from Nicaragua: (A) Great Corn Island, Atlántico Sur; (B) Cañón de Somoto, Nueva Segovia; (C, D) Parque Nacional Masaya, Masaya; and (E, F) Barrio Los Salvadoreños, Managua.
© Javier Sunyer (A); Rolando Dolmus (B); and Milton Salazar-Saavedra (C–F)

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Notes on an introduced population of *Basiliscus basiliscus* (Linnaeus, 1758) in Nicaragua

The Common Basilisk, *Basiliscus basiliscus*, is known to occur from Venezuela, Ecuador, and Colombia, through Panama and western Costa Rica up to extreme southwestern Nicaragua, at elevations from sea level to 1,200 m (Köhler, 2008). In Nicaragua, this species only has been recorded from a few specimens from along the Río Javillo (3 km N and 4 km W of Sapoá), a short river that empties into Lago de Nicaragua in the southernmost portion of the department of Rivas (Köhler, 2001), close to the border with Costa Rica.

In January of 2012, one of us (BMA) observed a population of *B. basiliscus* at the juncture of the Río Jesús with its tributaries, Río Santo Domingo "Los Gutiérrez Norte" and Río El Jocotillo "Los Sánchez Norte" (11.8501°N, 86.45767°W; WGS 84; elev. 75 m) at the remains of Presa La Junta, an old water dam located in Municipio de San Rafael del Sur, Departamento de Managua, Nicaragua (photo vouchers deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection UTADC-8628; Fig. 1). The area consists of Lowland Dry Forest (Holdridge, 1967; Savage, 2002) and is located ca. 110 km NW from the locality at Río Javillo.

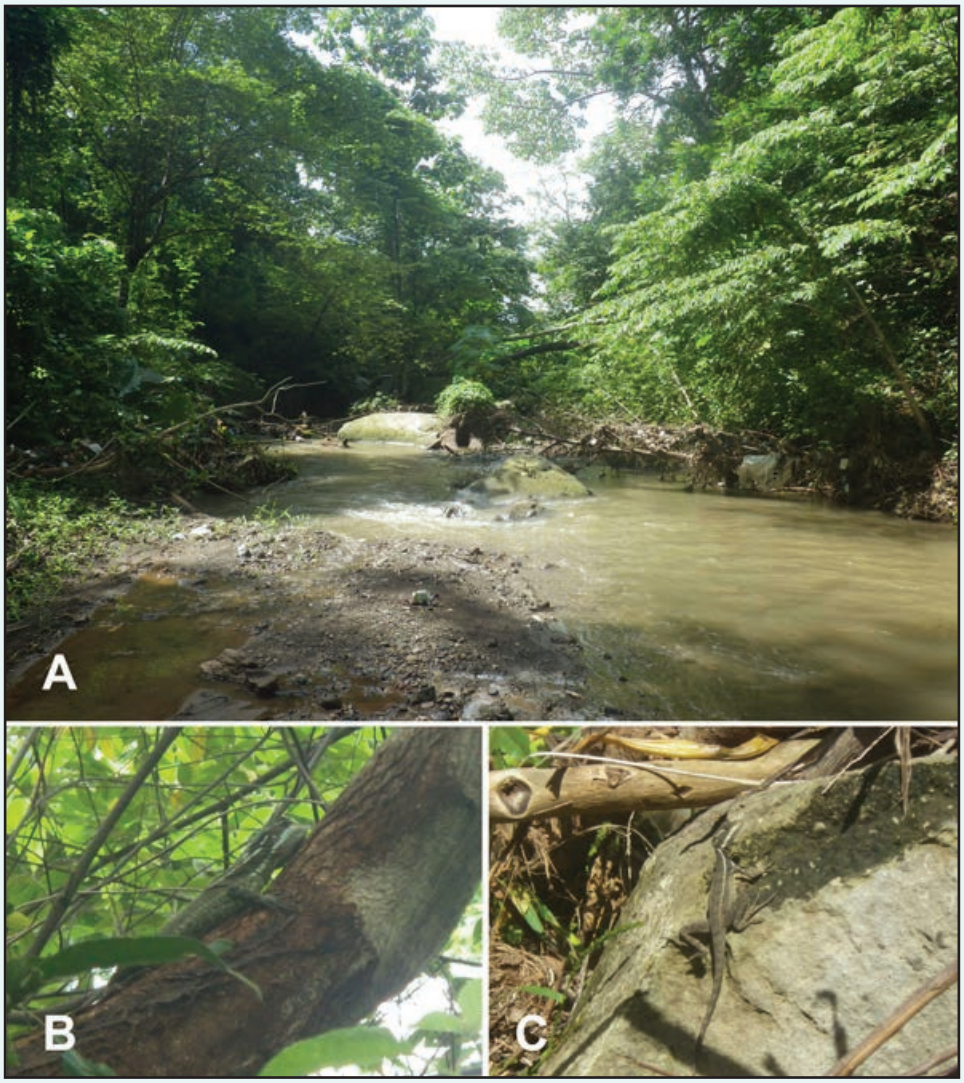

Fig. 1. (A) View of Río Jesús, Municipio de San Rafael del Sur, Departamento de Managua, Nicaragua; (B) and (C) individuals of *Basiliscus basiliscus* from Río Jesús. © Billy M. Alemán

The people living near the dam indicated that *B. basiliscus* became established in the area after individuals escaped or were released from a reptile farm on the northern side of Río Jesús. The reptile farm was started in the early 1990s, and was in operation for over 15 years; species reproduced at the farm included *Sceloporus variabilis*, *Boa imperator*, and *Crotalus simus* from Nicaragua, and *Basiliscus basiliscus* and *Erythrolamprus bizona* from Costa Rica. We are unaware if individuals of *E. bizona*, for which no Nicaraguan vouchers are available and thus has not been included in recent country checklists (Köhler, 2001; Sunyer and Köhler, 2010; Sunyer, 2014), escaped or were released in the area.

An estimate of the size of the introduced population of *B. basiliscus* in this area remains uncertain, but a relatively large population is present along the aforementioned rivers and associated streams. In certain areas of the Río Jesús, the density of the population was about one individual for every 3 m; juveniles and adult females were much more abundant than adult males, of which one individual was present for about every 50 m of the river.

Basiliscus basiliscus is a voracious and generalist hunter that preys on a wide variety of foods items, including insects, small mammals, birds, snakes, and lizards, and also feeds on the flowers and fruits of plants growing along the banks of streams and rivers (Savage, 2002; Köhler, 2008; Solórzano and Hidalgo, 2014). Although another congener, *B. vittatus*, has been recorded from the department of Managua (Köhler, 2001), this species has not been found in the immediate area. Additional studies are needed to estimate the size of the introduced population of *B. basiliscus* in the municipality of San Rafael del Sur, as well as to document the foraging behavior of this species and the potential impact it might have on the native biota.

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Rediscovery of the Honduran endemic snake *Tantilla lempira* Wilson and Mena, 1980 (Squamata: Colubridae)

For biogeographers, species rediscovery has a practical and conceptual significance (Ladle et al., 2011). The number of rediscovered species has increased over time, mostly brought about by improvements in technology and increased access to localities where some species are found (Jowers et al., 2013). In Honduras, however, some species are known only from a small number of museum specimens collected decades or even centuries ago, e.g., *Oedipina stuarti*, *Craugastor anciano*, and *Omoadiphas canula* (Ladle et al., 2011; McCranie and Castañeda, 2007; McCranie and Cruz Diaz, 2010).

Honduras has been considered a hotspot for biodiversity, as it contains the highest degree of endemism in Central America (Wilson and Johnson, 2010; Townsend and Wilson, 2010; Wilson et al., 2012; Solís et al., 2014; McCranie, 2015). Unfortunately, human disturbance and the current and projected human population growth in the country have taken their toll, causing dramatic population declines and even the disappearance of several endemic species (Wilson and McCranie, 2004; Jowers et al., 2013).

Ernest A. Liner collected the holotype of the colubrid snake *Tantilla lempira* (Mena's Centipede Snake) in 1968, and the species was described by Wilson and Mena (1980) based on three specimens, including two males from 41 km NW of Tegucigalpa, in the department of Francisco Morazán [LSUMZ 26093, 33737] and one female from Monserrat, in the department of El Paraiso [MCZR 49961]. Subsequently, two males were collected 3.7 km NW of Zambrano, in the department of Comayagua [LSUMZ 33620, 28833], another male was found 30.6 km NW of Mandasta, in the department of El Paraiso [KU 209348], and a third specimen (sex unknown) was reported from Agua Fria, in the department of La Paz [LSUMZ 87232] (Wilson and Mena, 1980; Wilson and Meyer, 1982, 1985; Wilson, 1990, 1999; McCranie, 2011). Since then, herpetological surveys near this species' type locality were unsuccessful in locating this species (McCranie, 2011). *Tantilla lempira*, therefore, has not been collected in over 24 years and currently is classified as Endangered (EN) by the IUCN (McCranie 2011; Wilson et al., 2013). Using an environmental vulnerability measure, Johnson et al. (2015) assessed this species a high vulnerability score (EVS = 14). Herein we document the rediscovery of *T. lempira*, which constitutes a new distributional record for this species (Fig. 1), and also present information on the snake's habitat.

On 1 July 2015 at 1000 h, Natalie Mahomar encountered an adult female *T. lempira* (Fig. 2) at Alto de Guerisne, Municipalidad de San Juan de Ojojona, SE of Tegucigalpa in the department of Francisco Morazán (13°56'29.6" N, 87°21'16.1"W; datum WGS 84; elev. 1,681 m); the snake was found in the yard of a house where the surrounding vegetation consists of Pine-Oak Forest, characterized by the trees *Pinus oocarpa*, *P. pseudostrobus*, *P. maximinoii*, and *Quercus bumelioides*, *Q. cortesii*, *Q. rugosa*, *Q. sapotifolia*, and *Q. acutifolia*, in association with of other trees of the genera *Acacia*, *Ficus*, and *Inga* (Mejia, 2001; González-Espinosa et al., 2006). Pine-Oak Forest in Honduras is under extreme pressure as a result of extensive livestock pasturing and uncontrolled forest fires (Portillo-Reyes, 2007). The locality for this specimen lies 39.9 km SE from from the above-mentioned locality outside of Tegucigalpa, and 47.6 km NW from the locality in Mandasta, El Paraiso.

The specimen was preserved in 95% alcohol. The measurements, taken to nearest 0.1 mm using a digital caliper, are as follows: snout–vent length = 168.9 mm; tail length = 37.1 mm; and total length = 206.0 mm. We took the following scale counts using the terminology in Wilson and Mena (1980) and McCranie (2011): ventrals and subcaudals (142 and 40, respectively); dorsal scale rows (15, 15, 16); supralabials right/left (7-7), with the first pair in contact posterior with the mental, and the first four in contact with the anterior chinschields; infralabials (6-6); preoculars (1); and postoculars (2). We noted the following coloration in life: the dorsum is brownish olive (29); a neutral gray (82) middorsal stripe is present, composed of a series of dots; the 3rd dorsal scale row is bordered above by an indistinct chamois (123 D) stripe; the top of the head is dark dusky brown (19), and contains an indistinct pair of chamois (123 D) spots; the nuchal area is chamois (123 D); the ventral coloration is amber (36) on the first 14 ventral scales, and the remainder of the ventral and subcaudal scales are chestnut (32) (Smithe, 1975–1981). The coloration in alcohol is as follows: the dorsum is dark grayish brown (20); a sepia (119) middorsal stripe is present, composed of a series of dots; the 3rd dorsal scale row is bordered above by an indistinct cream (54) stripe; the top of the head is vandyke brown (121), and contains an indistinct pair of cream (54) spots; the nuchal area is cream

(54); and the ventral coloration is cinnamon-rufous (40) on the first 14 ventral scales, grading to ferruginous (41) on the remainder of the ventral and subcaudal scales (Smithe, 1975–1981). The above description differs from that in Wilson and Mena (1980).

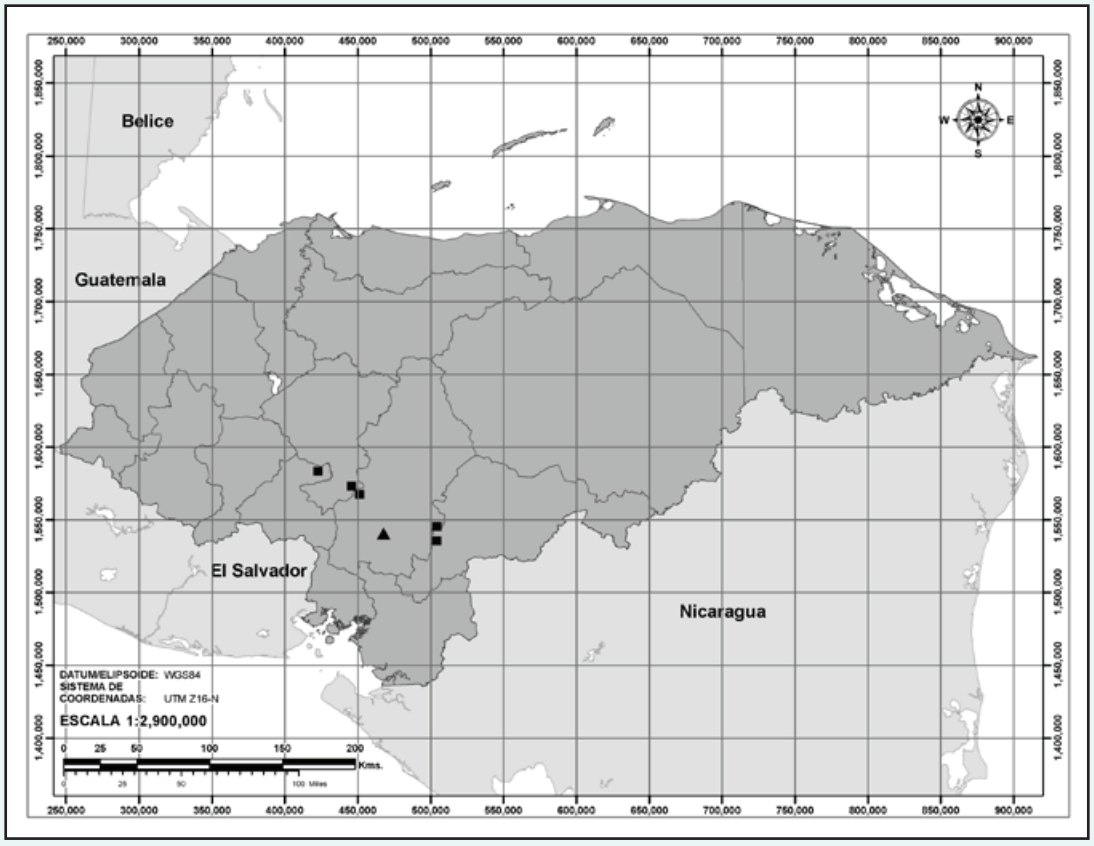

Fig. 1. Map of Honduras showing recorded localities (squares) for *Tantilla lempira*, and the new locality (triangle) reported herein.

The *Tantilla melanocephala* species group consists of nine species (*T. andinista, T. armillata*, *T. boipiranga*, *T. caspitrata*, *T. insulamontana*, *T. lempira*, *T. melanocephala*, *T. miyatai*, and *T. ruficeps*), with a collective distribution that extends from Guatemala southward to southern South America; three species (*T. armillata*, *T. lempira*, and *T. ruficeps*) are endemic to Central America and seven to South America (Wilson and Mata-Silva, *This issue*). Only two species in this group occur in Honduras (*T. armillata* and *T. lempira*; McCranie 2011; 2015; Solís et al., 2014; Townsend, 2014). Nevertheless, members of this group exhibit three important distributional patterns (geographic, physiographic, and phytogeographic; see Wilson and Mena, 1980). According to Wilson and Mena (1980) and McCranie (2011), the distribution of *T. lempira* lies almost at the northern extremity of the range for this group, where it occupies upland pine forest along the Pacific versant in the eastern portion of the southern cordillera of the Serranía region.

During the last decade, the areas in the vicinity of the recorded localities for *T. lempira* (in the departments of Comayagua, Francisco Morazán, and El Paraiso) have been modified extensively by human activities. From 2008 to 2013 we conducted herpetofaunal surveys at these localities, but our searches for *T. lempira* were unsuccessful. The abundance of this species at the new locality, and perhaps throughout its entire range, has become limited by the amount of habitat loss or alteration. Accordingly, we suggest that its conservation status should be elevated to Critically Endangered (CR).

A B

Fig. 2. Specimen of *Tantilla lempira* from Alto de Guerisne, San Juan de Ojojona, Departamento de Francisco Morazán, Honduras. (A) = dorsal and (B) = ventral views showing coloration in life. © Mario R. Espinal

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Geographic range extension and comments on the snake *Siphlophis cervinus* Laurenti, 1768 (Serpentes: Dipsadidae) in Panama

General surveys and incidental encounters reporting the presence of species for geographic regions are important for the development of management and conservation plans. Furthermore, for potentially dangerous species like snakes, it is essential to understand what species occur in different areas, especially where people reside and out of fear incidentally kill all species encountered.

The geographic distribution of *Siphlophis cervinus* extends from Panama to Bolivia and Trinidad (Köhler, 2008). This species has been reported from Lowland Dry Forest and Lowland Wet Forest at elevations from sea level to 300 m (Pérez Santos, 1999; Jaramillo et al., 2010). In Panama, *S. servinus* is an uncommon nonvenomous snake with a known scattered distribution in the province of Darién and in the former Canal Zone, with records from the provinces of Colón (Ibanez et al., "1995" [1997]), Panamá (VertNet, 2015), and Panamá Oeste (Rand and Myers, 1990; Ray and Ruback, 2015); we constructed a distribution map for these localities (Fig. 1) using ArcMap 10.1 (ESRI, 2012).

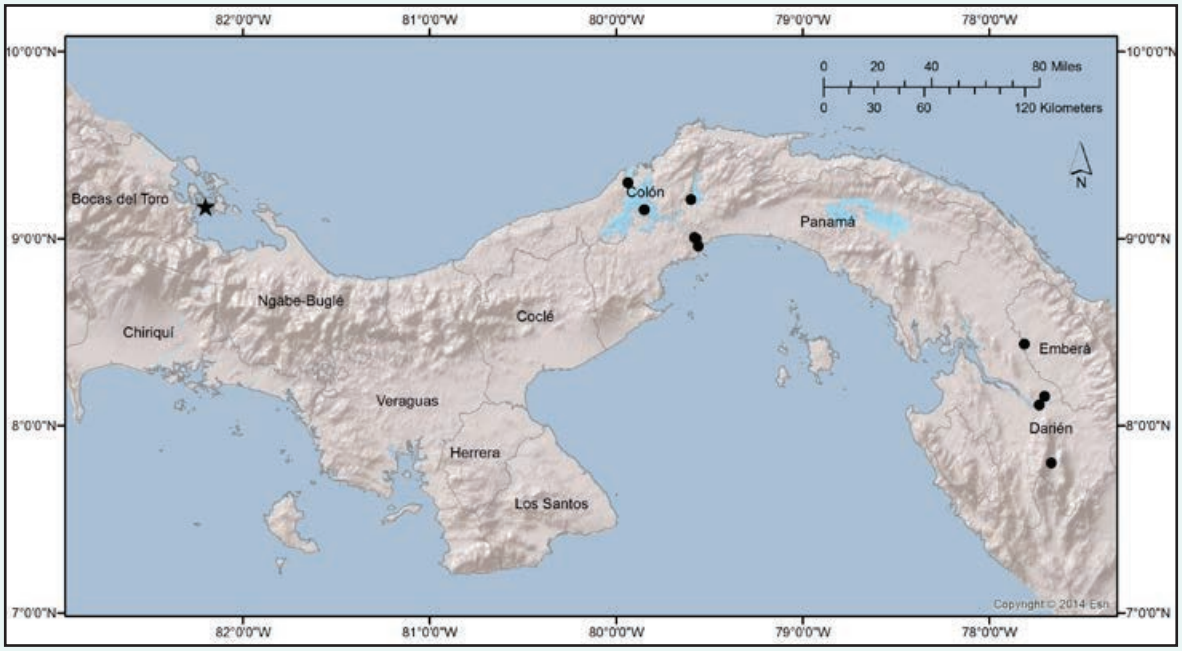

Fig. 1. Distribution map of *Siplophis cervinus* in the Republic of Panama. Circles denote previously documented records. Star denotes new record.

On 6 January 2015 at ca. 1030 h, one of us (BC) found an individual of *S. cervinus* (Fig. 2) in the village of Aguacate, Cauchero District, Province of Bocas del Toro, Republic of Panama (9°10'5.17"N, 82°12'11.45"W; datum WGS 84); elev. 50 m (Fig. 1). The snake was coiled on a stack of lumber under a piece of roofing zinc, next to a store located about 3.5 m from the mangrove shoreline. The remaining surroundings consisted of trimmed grass that extends for about 45 m to a wooded area lacking underbrush. This locality constitutes a range extension of 245 km E (straight-line distance) of the nearest record in the former Panama Canal Zone.

To date, no individuals of *S. cervinus* have been reported in the provinces or *comarcas* between the previously documented individuals in the Panama Canal Zone and the new locality in Bocas del Toro. Due to recent road development, some parts of the Atlantic versant of Panama have become accessible; some areas, however, still remain relatively undisturbed and their inaccessibility has restricted the ability to conduct herpetological surveys. In recent years other species of snakes have been documented on the Atlantic versant (e.g., Ray, 2011a, b; Duran-Geiger et al., 2014; Ray, 2015), and more likely will be found. Although the possibility exists that the *S. cervinus* reported herein was transported to the area by boat, a local person reported seeing another individual on Isla San Cristobal.

The IUCN Red List (www.iucnredlist.org) has not assessed this species, but Johnson et al. (2015) assigned it an Environmental Vulnerability Score (EVS) of 16, which is in the middle of the high vulnerability category (14–20).

Fig. 2. Individual of *Siphlophis cervinus* found on Isla Lomo, Boca District, Province of Bocas del Toro, Republic of Panama. © Aleisa Duley

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Reproduction and sperm storage in a captive female *Bothriechis schlegelii* (Serpentes: Viperidae) in Costa Rica

The Eyelash Palm-pitviper, *Bothriechis schlegelii* (Berthold, 1845), has a broad distribution that extends from southern Mexico to northwestern Peru (Campbell and Lamar, 2004). In Costa Rica, this species is found in tropical and subtropical rainforest along both the Caribbean and Pacific versants (Solórzano, 2004). This species is known to reach a maximum total length (TL) of 80 cm (Campbell and Lamar, 2004) and shows dimorphism in size, as females are longer (and bulkier) than males (Blody, 1983; Campbell and Lamar, 2004). Its diet consists of lizards, small rodents, treefrogs, bats, and occasionally small birds (Álvarez del Toro, 1983; Solórzano, 2004; Barrio-Amorós, 2015). Antonio (1980) noted that neonates use their tails to successfully lure small frogs, confirming the suggestion by Neill (1960) that the brightly colored tails in *B. schlegelii* function as a lure.

Several authors have reported captive birth and/or reproduction in *B. schlegelii* (Picado, 1931; Antonio, 1980; Blody, 1983; Murphy and Mitchell, 1984). *Bothriechis schlegelii* is viviparous; females can attain sexual maturity in less than three years, and under some circumstances can produce more than one litter per year (Blody, 1983).

Solórzano (2004) noted that the reproductive cycle of this species in Costa Rica apparently is seasonal, with parturition closely associated with the rainy season, from May to November (see Schuett et al., 2013).

The purpose of this note is to report a record number of neonates of *B. schlegelii* in a single litter for this species, as well as a recorded period (~35 months) of sperm retention by a female.

On 16 July 2012, the Serpentarium at the Instituto Clodomiro Picado, located at Dulce Nombre, Vázques de Coronado, Provincia de San José, Costa Rica, received an adult female *B. schlegelii* that was collected at Veragua, Provincia de Limón, Costa Rica. Upon arrival, the size and weight of the individual were as follows: snout–vent length (SVL) 61 cm; tail length (T) 11.5 cm; and body mass 81.9 g. The snake was assigned the number 1599, and maintained in quarantine housed in an individual container at temperatures ranging from 22 to 24° C, and a relative humidity from 74 to 82%. The snake was dewormed with Panacur®, and fed one medium-sized (14–16 g) laboratory mouse every 15 days, with the feeding pattern remaining constant for 35 months. For the next five months food consumption became irregular, suggesting that the snake might be pregnant (Fig. 1). Forty months after the snake arrived, on 9 November 2015, she gave birth to 23 neonates plus 8 stillborns. During this time she was isolated from other snakes. The mass and total length of the neonates (mean ± SD) was 3.3 ± 0.3 g and 20.8 ± 0.9 cm, respectively (Table 1). After parturition, the body mass of the female was 259.3 g, and it measured 71 cm SVL and 13.5 cm (T).

According to Blody (1983), female *B. schlegelii* cease to feed 4–5 months prepartum, and during this time appear pregnant. Moreover, Antonio (1980) reported a gestation period of 166 days for this species, which is consistent with data reported here. Picado (1931) reported 18 neonates, Antonio (1980) and Blody (1983) 17 and 20, and Murphy and Mitchell (1984) 12 and 19 for broods of *B. schlegelli* in captivity.

Here we report the largest brood known in this species to date; we also note an unusually long period of sperm retention prior to parturition. We suspect the female arrived at the Serpentarium after it mated with a male, but have no idea when this might have occurred. Schuett et al. (1992), Birkhead and Møller (1993), and Booth and Schuett (2011) have discussed long-term sperm storage (LTSS) in pitvipers and other snakes. For various reasons, we are confident that the present litter is not a case of facultative parthenogenesis (Schuett et al, 1997; Booth and Schuett, 2011; G. Schuett pers. comm). To our knowledge, this report on LTSS for *B. schlegelii* is a record for storage length. Most reports on LTSS involve temperate taxa (Schuett, 1992); Booth and Schuett, 2011); hence, our report is important because it provides data on a Neotropical species.

Table 1. Data of neonates after parturition. Biometric data is shown as total length (cm) and body mass (g) for each individual.

Neonate #	Total Length (cm)	Body Mass (g)
1	21.5	3.27
2	20	2.89
3	22	3.38
4	21.5	3.41
5	18.5	2.41
6	20.5	3.36
7	19.5	2.76
8	21.5	3.37
9	21.5	3.55
10	21	3.67
11	20.5	3.69
12	22	3.36
13	22	3.41
14	20.5	3.52
15	19.5	2.52
16	20.5	3.54
17	20.5	3.55
18	22	3.44
19	21	3.61
20	22	3.54
21	20.5	3.63
22	21	3.36
23	20.5	3.48

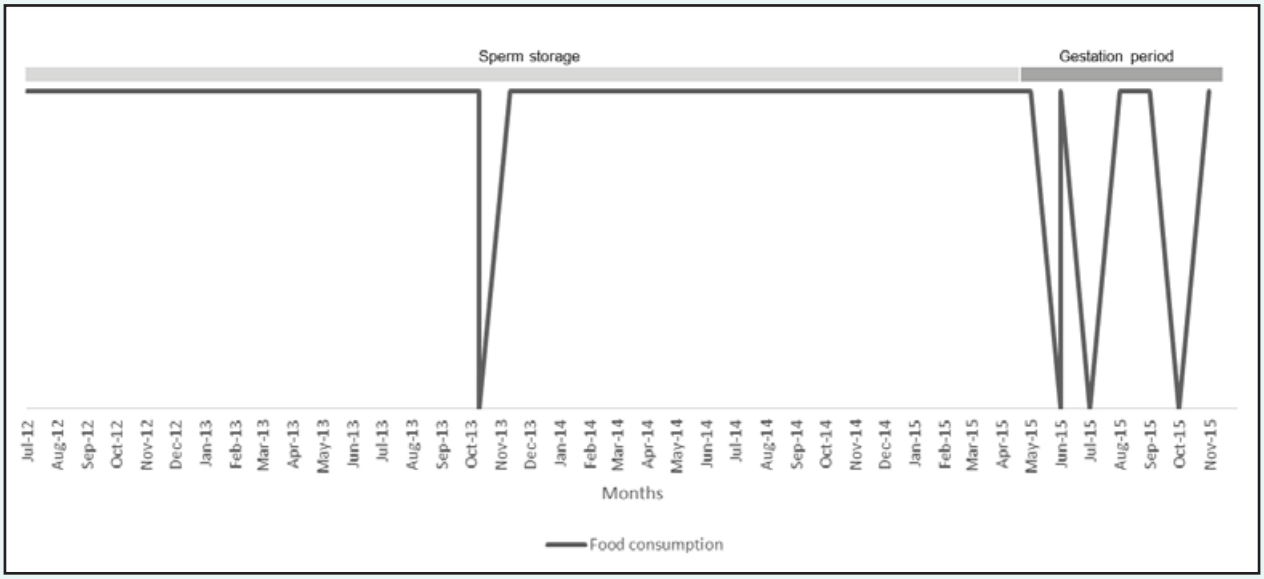

Fig. 1. Feeding pattern of the pregnant female *Bothriechis schlegelii*. Dates represent when the animal was offered food; inverted pyramids indicate dates when animal refused food. Sperm storage and gestation period are shown at the top.

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