Other Contributions

NATURE NOTES

Amphibia: Anura

***Anotheca spinosa* (Steindachner, 1864). Predation by *Cupiennius salei* (Araneae: Ctenidae).** The Coronated Treefog, *Anotheca spinosa*, is a moderately large hylid in which adults are characterized by the presence of integumentary-cranial co-ossification. The diagnostic color pattern of dark brown with black spots surrounded by white is present in all post-metamorphic individuals (Duellman, 2001; Luría-Manzano et al., 2014). The distribution of this species in Mexico is discontinuous, and it has been recorded in the states Puebla, Veracruz, Oaxaca, Chiapas, and Tabasco (Luría-Manzano et al., 2014; Térrez-Pérez and Barragan-Vázquez, 2017).

On 3 October 2015 at 1434 h, in Colonia Agrícola Rincón de las Flores, Tezonapa, Veracruz, Mexico (18°42'53.64"N; 96°50'54.49"W; WGS 84; elev. 1,134 m), in a patch of tropical semi-deciduous forest, we found a juvenile *A. spinosa* within a bract of *Xanthosoma robustum* (Araceae) as it was being consumed by a Tiger Wandering Spider, *Cupiennius salei* (Fig.1). Upon noticing our presence, the arachnid abandoned its prey, which allowed us to photograph the remains of the *A. spinosa* (Fig.2).

Although, several studies have reported spiders preying on amphibians, including anurans, in the diet of *C. salei* (e.g., Menin et al., 2005; Toledo, 2005; Aguilar-López et al., 2014; Calzada-Arciniega, 2014, and García-Vinalay and Pineda, 2017), this is first report of *A. spinosa* in the diet of this spider, as well as in the diet of other arthropods.

Fig. 1. A *Cupiennius salei* found consuming a juvenile *Anotheca spinosa* at Colonia Agrícola Rincón de Las Flores Tezonapa, Veracruz, Mexico.

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Fig. 2. Once the *Cupiennius salei* abandoned its prey, we were able to photograph the remains of the *Anotheca spinosa*.
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Literature Cited

Aguilar-López J. L., E. Pineda, and R. Luría-Manzano. 2014. Depredación de tres especies de herpetozoos por arañas en la región tropical de Veracruz, México. Revista Mexicana de Biodiversidad 85: 965–968.

Calzada-Arciniega, R. A. 2014. Predation of *Leptodactylus melanonotus* (Anura: Leptodactylidae) by *Cupiennius salei* (Araneae: Ctenidae). Bulletin of the Maryland Herpetological Society 50: 76–77.

Duellman, W. E. 2001. The Hylid Frogs of Middle America. 2 Volumes. Contributions to Herpetology, Volume 18, Society for the Study of Amphibians and Reptiles, Ithaca, New York.

Luría-Manzano, R., J. L. Aguilar-López, L. Canseco-Márquez, and M. G. Gutiérrez-Mayen. 2014. Distribución geográfica de *Anotheca spinosa* (Anura: Hylidae) en México: nuevo registro para la anfibiofauna de Puebla. Revista Mexicana de Biodiversidad 85: 1,285-1,288.

García-Vinalay, A., and E. Pineda. 2017. Nature Notes. *Rheohyla miotympanum* Cope, 1863. Predation. Mesoamerican Herpetology 4: 624–625.

Menin, M., D. J. Rodrigues, and C. S. Azevedo. 2005. Predation on amphibians by spiders (Arachnida, Araneae) in the Neotropical region. Phyllomedusa 4: 39–47.

Térrez-Pérez, M. A., and M. R. Barragan-Vázquez. 2017. Geographic Distribution. *Anotheca spinosa* (Coronated Treefrog). Herpetological Review 48: 118.

Toledo, S. 2005. Predation of juvenile and adult anurans by invertebrates: current knowledge and perspectives. Herpetological Review 36: 395–400.

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Craugastor polyptychus **(Cope, 1886). Diet and absence of skin alkaloids.** *Craugastor polyptychus* (Fig. 1) is a small leaf litter frog distributed along the humid lowlands from southeastern Nicaragua and across eastern Costa Rica to adjacent northwestern Panama (Köhler, 2011). In tropical lowland habitats, leaf litter arthropods are an important food source of many ground-dwelling amphibians (Solé et al., 2002, 2005; Mebs et al., 2010). The species related to *C. polyptychus*, however, are considered to be food generalists that consume a wide variety of arthropods (Toft, 1980, 1981; Lieberman, 1986).

In this study we examined the stomach contents of eight specimens of *C. polyptychus* collected at Moín, Provincia de Limón, Costa Rica (10.00357°N, -83.10439°W; WGS 84; elev. 20 m; SMF [= Senckenberg Museum of Natural History, Frankfurt, Germany]) 98771, 98979, 98982, 98986-88) and from near Manzanillo, Provincia de Limón, Costa Rica (9.63897°N, -82.6494°W; elev. 5 m: SMF 98984–85). We examined the stomach contents of these specimens using a dissecting microscope and scanning electron microscopy (SEM) to identify the prey items. Our microscopic examination of the stomach contents revealed a total of 25 prey items classified in nine arthropod orders (Table 1). Most of the prey items (31%) were ants, followed by springtails, spiders, and mites. The dried contents were glued to an alumina holder, sputtered with gold and analyzed with a Hitachi SEM (model S-4500) at an accelerating voltage of 5 kV (cold-field emission electron source; Fig. 2)

Fig. 1. *Craugastor polyptychus* from Moín, Limón, Costa Rica (from series SMF 98771, 98979, 98982, 98986-88).

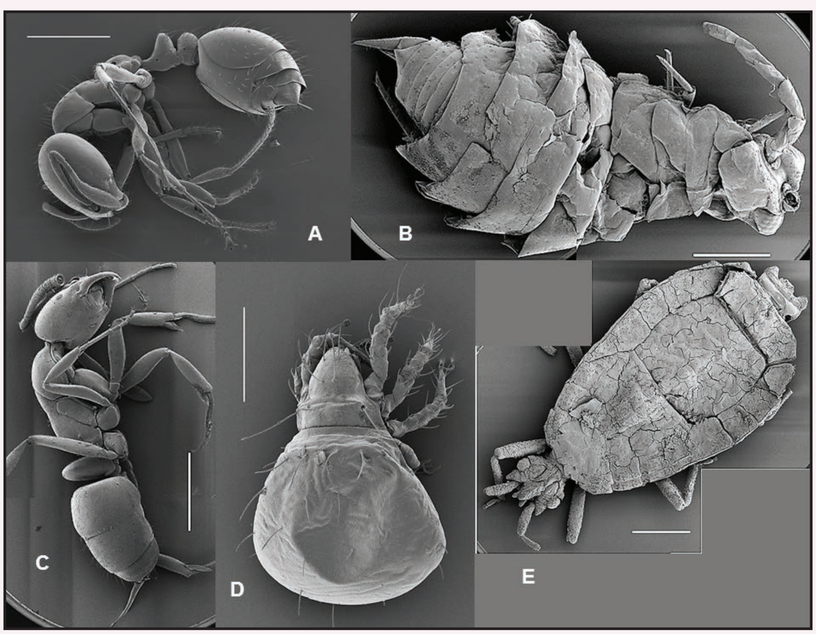

Fig. 2. Stomach contents of *Craugastor polyptychus* (scanning electron micrographs). (A) Ant, *Megalomyrmex* spp. (bar 500 µm); (B) springtail, *Entomobrya* spp. (bar 800 µm); (C) ant, *Camponotus* spp. (bar 800 µm); (D) mite, *Indotritia* spp. (bar 300 µm); and (E) bug, *Cimex* spp. (bar 700 µm).

The skin secretions of amphibians contain a variety of defensive compounds, and it is well established that in some species these compounds are of dietary origin, e.g., from ants and mites (Daly et al., 2002; Saporito et al., 2004, 2007; Takada et al., 2005). More than 800 lipid-soluble alkaloids have been identified in the skin of the frog families Dendrobatidae, Mantellidae, and Myobatrachidae, as well as of the toad genus *Melanophryniscus* (Daly et al., 1984, 2005, 2008; Garraffo et al., 1993; Smith et al., 2002; Mebs et al., 2005). Several alkaloids also have been detected in the skin of small frogs from Cuba, *Eleutherodactlyus iberia* and *E. orientalis* (Eleutherodactylidae), which preferably feed on mites (Rodriguez et al., 2011) known to contain pumiliotoxin alkaloids (Takada et al., 2005). Since sequestration of alkaloids from arthropods is known for sympatric frogs of the family Dendrobatidae, ethanolic extracts from specimens of *C. polyptychus* were analyzed for the presence of alkaloids. Chemical analysis of the ethanol extracts (70%) was performed for detection of alkaloids by gas chromatography/mass spectrometry as described previously (Mebs et al. 2010). The results of this study demonstrate that the frogs were entirely free of these compounds, indicating that *C. polyptychus* is devoid of a special uptake and transport system needed for sequestering alkaloids from their gut to skin glands, where they are stored and secreted.

Table 1. Arthropods found in the stomach contents of eight specimens of *Craugastor polyptichus*. Number of arthropods in brackets.

Hymenoptera	Wasp (1)	Vespidae, *Nectarinella championi*
	Ants (9)	Myrmicinae, *Pheidole* spp., *Megalomyrmex* spp., *Tetramorium* spp. Formicinae, *Camponotus* spp.
Hemiptera	Bug (1)	Cimicidae, *Cimex* spp.
Orthoptera	Cricket (1)	Tettigoniidae
Araneae	Spiders (3)	Oxyopidae, *Paucetia* spp. Salticidae, *Bagheera* spp.
Coleoptera	Beetle (1)	
Isoptera	Termite (1)	
Collembola	Springtails (4)	Entomobryidae, *Entomobrya* spp.
Acari	Mites (3)	Licaridae, *Liacarus* spp. Oribotritiidae, *Indotritia* spp.
Mantodea	Mantid (1)	

Literature Cited

Crawford, A. J., and E. N. Smith. 2005. Cenozoic biography and evolution of direct-developing frogs of Central America (Leptodactylidae: *Eleutherodactylus*) as inferred from a phylogenetic analysis of nuclear and mitochondrial genes. Molecular Phylogenetics and Evolution 35: 536–555.

Daly, J. W., R. J. Highet, and C. W. Myers. 1984. Occurrence of skin alkaloids in non-dendrobatid frogs from Brazil (Bufonidae), Australia (Myobatrachidae) and Madagascar (Mantellidae). Toxicon 22: 905–919.

Daly, J. W., T. F. Spande, and H. M. Garraffo. 2005. Alkaloids from amphibian skin: A tabulation of over eight-hundred alkaloids. Journal of Natural Products 68: 1,556–1,575.

Daly, J. W., H. M. Garraffo, T. F. Spande, H. J. C. Yeh, P. M. Peltzer, P. M. Cacivio, J. D. Baldo, and J. Faivovich. 2008. Indolizidine 239Q and quinolizidine 275I. Major alkaloids in two Argentinian bufonid toads (*Melanophryniscus*). Toxicon, 52: 858–870.

Köhler, G. 2011. Amphibians of Central America. Herpeton, Offenbach, Germany.

Mebs, D., W. Pogoda, R. Maneyro, and A. Kwet. 2005. Studies on the poisonous secretion of individual red bellied toads, *Melanophryniscus montevidensis* (Anura, Bufonidae), from Uruguay. Toxicon 46: 641–650.

Mebs, D., M. Jansen, G. Köhler, W. Pogoda, and G. Kauert. 2010. Myrmecophagy and alkaloid sequestration in amphibians: a study on *Ameerega picta* (Dendrobatidae) and *Elachistocleis* sp. (Microhylidae) frogs. Salamandra 46: 11–15.

Lieberman S. S. 1986. Ecology of the leaf litter herpetofauna of a Neotropical rain forest: La Selva, Costa Rica. Acta Zoologica Mexicana (ns) 15: 1–72.

Rodriguez, A., D. Poth, S. Schulz, and M. Vences. 2011. Discovery of skin alkaloids in a miniaturized eleutherodactylid frog from Cuba. PMC, Biology Letters 7: 414–418.

Saporito, R. A., H. M. Garraffo, M. A. Donnelly, A. L. Edwards, J. T. Longino, and J. W. Daly. 2004. Formicine ants: An arthropod source for the pumiliotoxin alkaloids of dendrobatid poison frogs. Proceedings of the National Academy of Sciences of the United States of America 101: 8,045–8,050.

Saporito, R. A., M. A. Donnelly, R. A. Norton, H. M. Garraffo, T. F. Spande, and J. W. Daly 2007. Oribatid mites: a major dietary source for alkaloids in poison frogs. Proceedings of the National Academy of Sciences of the United States of America 104: 8,885–8,890.

Smith, B. P., M. J. Tyler, T. Kaneko, H. M. Garraffo, T. F. Spande, and J. W. Daly. 2002. Evidence for biosynthesis of pseudophrynamine alkaloids by an Australian myobatrachid frog (*Pseudophryne*) and for sequestration of dietary pumiliotoxin. Journal of Natural Products 65: 439–447.

Solé, M., J. Ketterl, M. Di-Bernardo, and A. Kwet. 2002. Ants and termites are the diet of the microhylid frog *Elachistocleis ovalis* (Schneider, 1799) at an *Auracaria* forest in Rio Grande do Sul. Herpetological Bulletin 79: 14–17.

Solé, M., O. Beckmann, B. Pelz, A. Kwet, and W. Engels. 2005. Stomach-flushing for diet analysis in anurans: an improved protocol evaluated in a case study in *Auracaria* forests, southern Brazil. Studies on Neotropical Fauna and Environment 40: 23–28.

Takada, W., T. Sakata, S. Shimano, Y. Enami, N. Mori, R. Nishida, and Y. Kunahara. 2005. Scheloribatid mites as the source of pumiliotoxins in dendrobatid frogs. Journal of Chemical Ecology 31: 2,403–2,415.

Toft, C. A. 1980. Seasonal variation in populations of Panamanian litter frogs and their prey: a comparison of wetter and drier sites. Oecologia 47: L34–38.

Toft, C. A. 1981. Feeding ecology of Panamanian litter anurans: patterns in diet and foraging mode. Journal of Herpetology 15: 139–144.

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***Incilius mazatlanensis* (Taylor, 1940). Reproduction.** The distribution of the Sinaloa Toad, *Incilius mazatlanensis*, extends along the Pacific coastal plain of Mexico from northern Sonora and southwestern Chihuahua to Colima, and also at low elevations along the Pacific drainage of Durango (Frost, 2017). Hardy and McDiarmid (1969) reported finding breeding choruses in July and August, and noted that breeding probably continues throughout the rainy season (July–September); Lemos Espinal and Smith (2007) and Lemos Espinal et al. (2013) provided similar information. More recently, Rorabaugh and Lemos-Espinal (2016) reported individuals active from March into October, with breeding occurring in permanent water and also in rain-filled pools and ephemeral streams. In this paper, I present data from a histological examination of *I. mazatlanensis* gonadal material from Sinaloa, Mexico, and provide the minimum sizes for reproductive activity in males and females. The use of museum collections for obtaining reproductive data avoids removing additional animals from the wild.

I examined 51 specimens of *I. mazatlanensis* collected from 1959 to 1968 in Sinaloa, Mexico, and maintained in the her*petology collection of the Natural History Museum of Los Angeles County (LACM), Los Angeles, C*alifornia, United States (Appendix 1). The sample consists of 32 adult males (mean snout–vent length [SVL] = 67.5 ± 5.9 SD, range = 56–85 mm) and 19 adult females (mean SVL = 76.1 mm ± 11.5 SD, range = 63–100 mm). I used an unpaired *t*-test for analyzing the differences in mean SVL between the sexes (Instat, vers. 3.0b, Graphpad Software, San Diego, California, United States).

I made a small incision in the lower part of the abdomen and removed the left testis from males, and a piece of the left ovary from females. I embedded the gonads in paraffin and cut sections at 5 µm, stained them wit*h* Harris hematoxylin followed by eosin counterstain (Presnell and Schreibman, 1997), and deposited the histology slides at LACM.

The testicular morphology of *I. mazatlanensis* is similar to that of other anurans, as described by Ogielska and Bartmanska (2009a). Within the seminiferous tubules, spermatogenesis occurs in vesicles called cysts, which remain closed until the late spermatid stage is reached; cysts then open and differentiating sperm reach the lumina of the seminiferous tubules (Ogielska and Bartmanska, 2009a). I list the monthly stages in the testicular cycle of *I. mazatlanensis* in Table 1, and indicate the following three stages: (1) "Pre-breeding," one male from April contained only small quantities of open sperm cysts; no sperm was present in the lumina of the seminiferous tubules (LACM 87857); (2) "Breeding Condition," open sperm cysts, each containing a cluster of sperm; clusters of sperm also were present in lumina of many of the seminiferous tubules; and (3) "Post-breeding," evident in one male from August (Table 1) that contained a few open sperm cysts (LACM 87941). The smallest reproductively active male (spermiogenesis) measured 56 mm SVL (LACM 97877) and was from June. The sample contained no subadult males, so I am unable to provide a minimum size at which maturity in *I .mazatlanensis* is reached.

Table 1. Three monthly stages in the testicular cycle of 32 adult *Incilius mazatlanensis* males from Sinaloa, Mexico.

Month	*n*	(1) Pre-breeding	(2) Breeding Condition	(3) Post-breeding
April	4	1	3	0
June	8	0	8	0
July	16	0	16	0
August	4	0	3	1

The mean SVL of *I. mazatlanensis* females was significantly larger than that of males ($t = 3.5$, $df = 49$, $P = 0.0009$). The ovaries of *I. mazatlanensis* are typical of other anurans in being paired organs lying on the ventral sides of the kidneys, which are filled with diplotene oocytes in various stages of development in adults (Ogielska and Bartmanska, 2009b). Mature oocytes are filled with yolk droplets; the layer of surrounding follicular cells is stretched thinly. Three stages were present in the spawning cycle (Table 2). In the "Pre-spawning" category, I observed in one female from July (LACM 6177) that contained yolk filled oocytes, which were smaller than those seen in stage 2 ("Ready to Spawn" females) and were similar to Secondary Growth Stage 5 "progressive accumulation of yolk platelets" in Uribe (2011). Because it was early in the *I. mazatlanensis* spawning season, there was sufficient time for these oocytes to have completed their development and be ovulated. The smallest reproductively active female (mature oocytes) measured 63 mm SVL (LACM 87917) and was from June. Since my sample contained no subadult *I. mazatlanensis* females, I am unable to provide a minimum size at which maturity is reached. If the one female from July in "pre-spawning" condition is included, 13/19 (68%) of the adult females were in spawning condition (Table 2). Perhaps the six reproductively inactive females in the "not in spawning condition" had spawned earlier in the year.

Table 2. Three monthly stages in the ovarian cycle of 19 adult *Incilius mazatlanensis* from Sinaloa, Mexico.

Month	*n*	(1) Pre-spawning	(2) Ready to Spawn	(3) Not in Spawning Condition
June	5	0	4	1
July	6	1	2	3
August	7	0	5	2
September	1	0	1	0

Atresia (spontaneous degeneration of oocytes) is a widespread process occurring in the ovaries of all vertebrates (Uribe, 2009). This process is common in the amphibian ovary (Saidapur, 1978), and involves the spontaneous digestion of a diplotene oocyte by its own hypertrophied and phagocytic granulosa cells that invade the follicle, and eventually degenerate after accumulating dark pigment (Ogielska and Bartmanska, 2009b). Atresia was uncommon in the 13 females in spawning condition, and occasionally was evident in three (23%) and common in one (8%). High levels of follicular atresia can remove females from the breeding population (Goldberg, 2017).

In conclusion, *I. mazatlanensis* exhibits a spawning cycle that coincides with the rainy season in Sinaloa, Mexico. Whether the non-reproductive females from June, July, and August spawned earlier in the year remains uncertain, and warrants the examination of additional *I. mazatlanensis* females.

Acknowledgments—I thank Greg B. Pauly (LACM) for permission to examine the specimens of *Incilius mazatlanensis*.

Literature Cited

Frost, D. R. 2017. Amphibian Species of the World: an Online Reference. Version 6.0. American Museum of Natural History, New York, United States (www.research.amnh.org/herpetology/amphibia/index.html; accessed 21 September 2017).

Goldberg, S. R. 2017. Notes on reproduction of California Treefrogs, *Hylioloa cadaverina* (Anura: Hylidae) from Riverside County, California. Sonoran Herpetologist 29: 3–5.

Hardy, L. M., and R. W. McDiarmid. 1969. The amphibians and reptiles of Sinaloa, México. University of Kansas Publications, Museum of Natural History 18: 39–252.

Lemos Espinal, J. A., and H. M. Smith. 2007. Anfibios y Reptiles del Estado de Chihuahua, México Amphibians and Reptiles of the State of Chihuahua, Mexico. Universidad Nacional Autónoma de México, Tlalnepantla, edo. de México and Comisión Nacional para el Conocimiento y Uso de la Biodiversidad, México, D.F., Mexico.

Lemos Espinal, J. A., H. M. Smith, and A. Cruz. 2013. Amphibians and Reptiles of the Sierra Tarahumara of Chihuahua, Mexico / Anfibios y Reptiles de La Sierra Tarahumara de Chihuahua, México. ECO Herpetological Publishing & Distribution, Rodeo, New Mexico, United States.

Ogielska, M., and J. Bartmanska. 2009a. Spermatogenesis and male reproductive system in Amphibia—Anura. Pp. 34–99 *In* M. Ogielska (Ed.), Reproduction of Amphibians. Science Publishers, Enfield, New Hampshire, United States.

Ogielska, M., and J. Bartmanska. 2009b. Oogenesis and female reproductive systems in Amphibia—Anura. Pp.153–272 *In* M. Ogielska (Ed.), Reproduction of Amphibians. Science Publishers, Enfield, New Hampshire, United States.

Presnell, J. K., and M. P. Schreibman. 1997. Humason's Animal Tissue Techniques. 5th ed. The Johns Hopkins University Press, Baltimore, Maryland, United States.

Rorabaugh, J. C., and J. A. Lemos-Espinal. 2016. A Field Guide to the Amphibians and Reptiles of Sonora, Mexico. ECO Herpetological Publishing & Distribution, Rodeo, New Mexico, United States.

Saidapur, S. K. 1978. Follicular atresia in the ovaries of nonmammalian vertebrates. Pp. 225–244 *In* G. H. Bourne, J. F. Danielli, and K. W. Jeon (Eds.), International Review of Cytology. Vol. 54. Academic Press, New York, New York, United States.

Uribe, M. C. A. 2009. Oogenesis and female reproductive system in Amphibia—Urodela. Pp. 273–304 *In* M. Ogielska (Ed.), Reproduction of Amphibians. Science Publishers, Enfield, New Hampshire, United States.

Uribe, M .C. A. 2011. Hormones and the female reproductive systems of amphibians. Pp. 55–81 *In* D. O.Norris and K. H. Lopez (Eds.), Hormones and Reproduction of Vertebrates, Volume 2: Amphibians. Elsevier, Amsterdam, Netherlands.

Appendix 1: Specimens of *Incilinus mazatlanensis* from Sinaloa, Mexico, examined from the herpetology collection of the Natural History Museum of Los Angeles County (LACM), Los Angeles, California, United States.

Incilius mazatlanensis (51). **MEXICO:** SINALOA: LACM 6138, 6141, 6143–6145, 6147, 6149, 6151, 6154, 6155, 6160, 6165, 6166, 6169–6171, 6173, 6175-6177, 37063, 87854-87857, 87865, 87913, 87915–87917, 87919–87922, 87924–87930, 87932-7936, 87938, 87939, 87941, 87942, 97877.

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Teratohyla pulverata **(Peters, 1873). Parasitism.** Myiasis is defined as the infestation of live vertebrates with dipterous larvae (Zumpt, 1965). In the Neotropics, insects of the dipteran family Sarcophagidae, commonly known as flesh flies, primarily are responsible for causing myiasis in anurans, which normally leads to the death of the amphibian host (Dodge, 1968; Crump and Pounds, 1985; Hagman et al., 2005; Traves and Townsend, 2010; Gómez-Hoyos et al., 2012).

Records of Sarcophagidae parasitism in Neotropical anurans include the following families, species, and countries: Bufonidae (*Atelopus varius* from Costa Rica [Crump and Pounds, 1985 and Pounds and Crump, 1987], *Rhinella beebei* from Venezuela [Lopes and Vogelsang, 1953], *R. margaritifera* from Brazil [Carvalho-Filho et al., 2010], and *R. schneideri* fron Brazil [Souza-Pinto et al., 2015]); Centrolenidae (*Hyalinobatrachium fleischmanni* from Panama [Medina et al., 2009]); Craugastoridae ("*Eleutherodactylus*" sp. from Panama [Dodge, 1968], *Pristimantis achatinus* from Colombia [Escobar-Vargas et al., 2016], and *P. thectopternus* from Colombia [Gómez-Hoyos et al., 2012]); Dendrobatidae (*Ameerega bassleri*, *A. cainarachi*, and *A. trivittata* from Peru [Hagman et al., 2005]); Hylidae (*Agalychnis saltator* from Nicaragua [Travers and Townsend, 2010], *Aplastodiscus arildae* from Brazil [Eizemberg et al., 2008], *Dryaderces inframaculata* from Brazil [Pinto et al., 2017], *Hypsiboas atlanticus* from Brazil [Oliveira et al., 2012], *H. beckeri* from Brazil [Mello-Patiu and Luna-Dias, 2010], and *Scinax fuscovarius* and *Scinax gr. ruber* from Brazil [Souza-Pinto et al., 2015]); Leptodactylidae (*Leptodactylus latrans* from Brazil [Müller et al., 2015]); Ranidae (*Lithobates catesbeianus* from Brazil [Souza et al., 1989]); and Odontophrynidae (*Proceratophrys* sp. from Brazil [Lopes, 1981]).

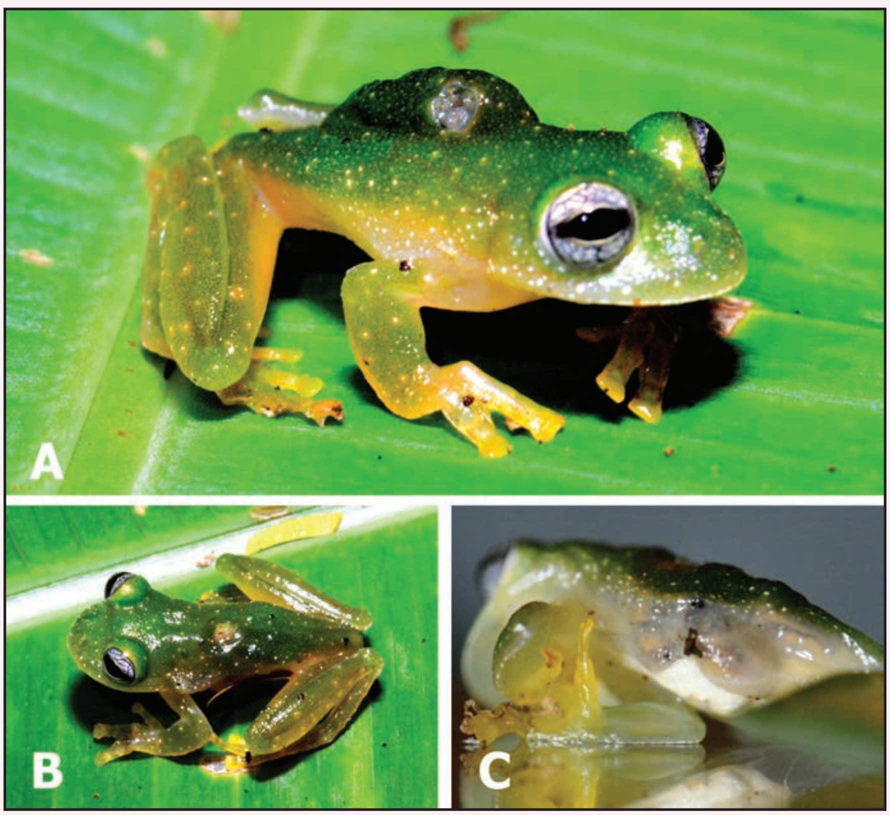

Fig. 1. A *Teratohyla pulverata* with dorsal myiasis from caño El Gaitán, Reserva Privada Refugio Bartola, Departamento Río San Juan, Nicaragua. Pictured here is the frog in life showing a detail of (A) the four fly larvae, (B) a lesion on the dorsum of the frog, and (C) a ventral view of the dead frog showing the live parasites and associated internal tissue damage.
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See video clip at: https://drive.google.com/file/d/0ByNeaJPXvuILb1hNTlJ4LUVHb1E/view

On the evening of 30 May 2015, during an acoustic amphibian workshop, Milton Salazar-Saavedra, Julio Loza, Maynor Fernandez, Liliam Morales, Eduardo Boza, and Tomás González observed an adult *Teratohyla pulverata* active on a leaf of a Heliotropo plant (*Hedychium coronarium*, Zingiberaceae), ca. 35 cm above the ground at caño El Gaitán (10.99548°N, 84.30501°W; datum WGS 84; elev. 45 m), Reserva Privada Refugio Bartola, Departamento Río San Juan, Nicaragua, in an area containing well preserved Lowland Wet Forest (Holdridge, 1967; Savage 2002). The frog was found with dorsal myiasis and had been parasitized by four fly larvae of the family Sarcophagidae, which also were visible ventrally (Fig. 1 + video clip). The anuran was captured and taken to the laboratory at the reserve, where it died after ca. 24 h. Both the frog and the insect larvae soon began to decompose, and thus were not preserved. Other centrolenid frogs observed in the area during our survey included adult individuals of *Sachatamia albomaculata*, *Espadarana prosoblepon*, and *Teratohyla spinosa*, as well as eggs of *Cochranella granulosa*, all of which showed no signs of parasitism.

Our observation represents to the first record of myiasis in frogs of the genus *Teratohyla*, the second record of myiasis in Centrolenid frogs (Medina et al., 2009), and the second record of myiasis in Nicaraguan anurans (Travers and Townsend, 2010).

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Literature Cited

Carvalho-Filho, F. D. S., J. O. Gomes, A. O. Maciel, M. J. Sturaro, and K. R. A. Silva. 2010. *Rhinella margaritifera* (NCN). Parasites. Herpetological Review 41: 479–478.

Crump, M. L., and J. A. Pounds. 1985. Lethal parasitism of an aposematic anuran (*Atelopus varius*) by *Notochaeta bufonivora* (Diptera: Sarcophagidae). Journal of Parasitology 71: 588–591.

Dodge, H. R. 1968. The Sarcophagidae of Barro Colorado Island, Panama (Diptera). Annals of the Entomological Society of America 61: 421–450.

Eizemberg, R., L. T. Sabagh, and R. S. Mello. 2008. First record of myiasis in *Aplastodiscus arildae* (Anura: Hylidae) by *Notochaeta bufonivora* (Diptera: Sarcophagidae) in the Neotropical area. Parasitology Research 102: 329–331.

Escobar-Vargas, S., M. Marín-Martínez, and J. C. Zuluaga-Isaza. 2016. First report of flesh fly eggs (Diptera: Sarcophagidae) in *Pristimantis achatinus* (Anura: Craugastoridae) from Colombia. Museo de Historia Natural de la Universidad de Caldas 20: 231–234.

Gómez-Hoyos, D. A., T. Suárez-Joaqui, and O. Marín-Gómez. 2012. Flesh fly myiasis (Diptera: Sarcophagidae) in *Pristimantis thectopternus* (Anura: Strabomantidae) from Colombia. Herpetology Notes 5: 27–29.

Hagman, M., T. Pape, and R. Schulte. 2005. Flesh fly myiasis (Diptera, Sarcophagidae) in Peruvian poison frogs genus *Epipedobates* (Anura, Dendrobatidae). Phyllomedusa 4: 69–73.

Holdridge, L. R. 1967. Life Zone Ecology. Tropical Science Center, San José, Costa Rica.

Lopes, H. S. 1981. Notes on American Sarcophagidae (Diptera). Revista Brasileira de Biologia 41: 149–152.

Lopes, H. S., and E. G. Vogelsang. 1953. *Notochaeta bufonivora* n. sp., parasita de *Bufo granulosus* Spix em Venezuela (Diptera Sarcophagidae). Anais da Academia Brasileira de Ciencias 25: 139–143.

Medina, D., M. Rivera, R. Cossio, E. Medina, and S. Bermúdez. 2009. Primer registro de miasis por Sarcophagidae (Diptera: Oestroidea) en *Hyalinobatrachium fleischmanni* (Anura: Centrolenidae) de Panamá. Revista Mexicana de Biodiversidad 80: 263–264.

Mello-Patiu, C.A., and C. Luna-Dias. 2010. Myiasis in the Neotropical Amphibian *Hypsiboas beckeri* (Anura: Hylidae) by a new species of *Lepidodexia* (Diptera: Sarcophagidae). Journal of Parasitology 96: 685–688.

Müller, G. A., C. R. Lehn, A. Bemvenuti, and C. B. Marcondes. 2015. First report of myiasis (Diptera: Sarcophagidae) in anuran of Leptodactylidae (Amphibia). Revista Colombiana de Ciencia Animal 7: 217–220.

Oliveira, R. M., C. V. M. Mendes, D. S. Ruas, M. Solé, L. C. Pinho, and R. Rebouças. 2012. Myiasis on *Hypsiboas atlanticus* (Caramaschi and Velosa, 1996) (Anura: Hylidae) from southern Bahia, Brazil. Herpetology Notes 5: 493–494.

Pinto, K. C., B. Cezarotti Padilha, L. S. dos Santos Cruz, G. de Avila Batista, M. D. Pinto Rossi, D. Lara Martins, M. Penhacek, W. Vaz-Silva, and J. Mafra Neves. 2017. Myiasis caused by Sarcophagidae fly in *Dryaderces inframaculata* (Boulenger, 1882) (Anura: Hylidae) in the north of Mato Grosso, Brazil. Herpetology Notes 10: 147–149.

Pounds, J. A., and M. L. Crump. 1987. Harlequin frogs along a tropical montane stream: aggregation and the risk of predation by frog-eating flies. Biotropica 19: 306–309.

Savage, J. M. 2002. The Amphibians and Reptiles of Costa Rica: A Herpetofauna between Two Continents, between Two Seas. The University of Chicago Press, Chicago, Illinois, United States.

Souza Jr., F. L. S., C. W. O. Souza, M. Hipolito, L. Baldassi, and M. L. Martins. 1989. Cases of buccal myiasis in the Bullfrog (*Rana catesbeiana* Shaw, 1802), with larvae of *Notochaeta* sp. Aldrich, 1916 (Diptera: Sarcophagidae) in São Paulo, Brazil. Memórias do Instituto Oswaldo Cruz 84: 517–518.

Souza-Pinto, F. C., I. F. França, and C. A. de Mello-Patiu. 2015. Brief description of myiasis cases in three amphibian species from Atlantic Forest located in the central region of the State of Minas Gerais, Brazil. Herpetology Notes 8: 287–290.

Travers, S. L., and J. H. Townsend. 2010. Myiasis on a Neotropical leaf frog *Agalychnis saltator* Taylor, 1955. Herpetology Notes 3: 355–357.

Zumpt, F. 1965. Myiasis in man and animals in the Old World. Butterworth, London, United Kingdom.

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Reptilia: Crocodylia

***Crocodylus moreletii* (Duméril & Bibron, 1851). Ectoparasitism.** *Crocodylus moreletii* inhabits freshwater lagoons, rivers, and streams throughout southern Mexico, Belize, and Guatemala (Ross, 1998). This species is listed as Least Concern by the International Union for Conservation and Nature (IUCN), and under Appendix II of the Convention on International Trade in Endangered Species of Flora and Fauna (CITES). Increased habitat destruction, pollution, and hybridization between *C. moreletii* and *C. acutus* in Belize, however, recently have raised concerns among local conservationists (Hekkala et al., 2015; Thorbjarnarson et al., 2006), leading to the possible reclassification of *C. moreletii* in Belize as Threatened.

Leeches are a common crocodylian ectoparasite, known to parasitize fresh- and saltwater crocodylians as hosts (Rainwater et al., 2001). Leeches typically are found attached around the mouth of their host, but also have been documented around the neck and legs of individuals (Tellez, 2013; Tellez et al., 2017). Leeches also are known vectors of blood parasites, such as *Haemogregarina crocodilinorum* transmitted to *Alligator mississippiensis* via *Placobdella multilineata* (Cherry and Ager, 1982). To date, no documentation is available for leeches (and the blood parasites they transmit) that negatively impact the health of wild crocodylians, suggesting a commensal relationship. Here, we describe three different observations of leech parasitism on *C. moreletii* in Belize.

On 3 June 2017, we observed a leech on the ventral portion of the right hind leg of a male *C. moreletii* (total length [TL] = 1.8 m) during a nocturnal capture survey in a rice field located in Spanish Lookout, Belize (Fig. 1). That same night we captured a second male *C. moreletii* (TL = 1.5 m) that was parasitized by two leeches, one in the false nostril of the individual and the second on the roof of the animal's mouth (Fig. 2). The capture site consists of a combination of rainwater and water diverted from a nearby freshwater stream, surrounded by grassland vegetation and fallen debris from the adjacent forest; our preliminary data suggests that such habitat favors the parasitism of crocodiles by leeches.

A through examination of photographs taken that night revealed that the leeches are species in the family Glossiphoniidae, but their identification remained tentative, as we did not retrieve the ectoparasites. The morphology of the leeches, however, is similar to that of our third observation (see below), in which the leech was identified as *Haementeria acuecueyetzin*.

Fig. 1. A leech parasitizing the ventral portion of the right hind leg of a *Crocodylus moreletii* in Spanish Lookout, Belize. © Danni Brianne

Fig. 2. A leech (circled) parasitizing the mouth of a male *Crocodylus moreletii* on a farm in Spanish Lookout, Belize. © Carys Corry-Roberts

On 14 July 14 2017, we captured a female *C. moreletii* measuring 1.2 m (TL) amongst a cove of lily pads off the Sittee River in Stann Creek, southern Belize (Fig. 3). In total, we removed 184 leeches from this animal, which we identified as *H. acuecueyetzin*. The identification of this leech expands the current known geographical range of this species, and also provides a new host record. To our knowledge, our observations are the first record of leeches parasitizing *C. moreletii* in Belize, in addition to the first record of leeches parasitizing *C. moreletii* from throughout its range.

Fig. 3. Multiple leeches on the dorsal portion of a female *Crocodylus moreletii* captured on the Sittee River, Stann Creek, Belize.
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Literature Cited

Cherry, R. H., and A. L. Ager. 1982. Parasites of American Alligators (*Alligator mississippiensis*) in south Florida. Journal of Parasitology 68: 509–510.

Hekkala E. R., S. G. Platt, J. B. Thorbjarnarson, T. R. Rainwater, M. Tessler, S. W. Cunningham, C. Twomey, and G. Amato. 2015. Integrating molecular, phenotypic and environmental data to elucidate patterns of crocodile hybridization in Belize. Royal Society Open Science 2: 150409. (dx.doi.org/10.1098/rsos.150409)

Rainwater, T. R., S. G. Platt, R. G. Robbins, and S. T. McMurry. 2001. Ticks from a Morelet's Crocodile in Belize. Journal of Wildlife Diseases 37: 836–839.

Ross, J. P. 1998. Pp. 1–9, 46–47 *In* J. P. Ross (Ed.), Crocodiles: Status Survey and Conservation Action Plan. 2nd ed. IUCN/SSC Crocodile Specialist Group, Gland, Switzerland, and Cambridge, United Kingdom, Information Press, Oxford, United Kingdom.

Tellez, M. 2013. A Checklist of Host-Parasite Interactions of the Order Crocodylia. UC Publications in Zoology, University of California, Berkeley, California.

Tellez, M., S. Matola, and D. Brianne. 2017. Nature Notes. *Crocodylus acutus* (Cuvier, 1807). Ectoparasitism. Mesoamerican Herpetology 4: 415–417.

Thorbjarnarson, J., F. Mazzotti, E. Sanderson, F. Buitrago , M. Lazcano, K. Minkowski, M. Muñiz, P. Ponce, L. Sigler, R. Soberon, A. M. Trelancia, and A. Velasco A. 2006. Regional habitat conservation priorities for the American Crocodile. Biological Conservation 128: 25–36.

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Reptilia: Squamata (lizards)

Comments on the biology of *Gerrhonotus parvus* (Reptilia: Squamata: Anguidae)

The Pigmy Alligator Lizard, *Gerrhonotus parvus*, is a relatively small anguid in which the holotype, an adult female, measured 152 mm in total length (TL), 55 mm in snout–vent length (SVL), and 97 mm in tail length (T_aL) (Knight and Scudday, 1985). This species can be differentiated from its congeners by a combination of the following characters: small adult size; smooth dorsal scales; nasals in contact with rostral; 2nd primary temporal in contact with 5th medial supraocular; suboculars separated from lower primary temporal by an upper labial; and wide pale crossbands on the tail (Knight and Scudday, 1985). The scalation characters of the specimens we collected (see below) are consistent with those reported for this species.

From 2012 to 2015, we conducted extensive surveys during which we collected specimens and/or observed individuals of *G. parvus* at the following four localities along the Sierra Madre Oriental, in the state of Nuevo León, Mexico: Galeana (six individuals/specimens); Cañon de San Isidro, Santiago (46); Cañon de Mireles, Los Rayones (one); and Cañon de Reflexiones in Santa Catarina (one). We collected general morphological and environmental data on all of the individuals/specimens. This note is part of a series of contributions provided by our research group on the distribution and biology of this species.

Information on hatchlings.—Our preserved collection contains three hatchlings of *Gerrhonotus parvus* collected at Cañon de San Isidro, Santiago (25.380878°N, 100.309179°W; WGS 84; elev. 1,720 m), from which we recorded certain morphological characteristics and environmental data (Table 1). The first is an unsexed hatchling (UANL-6785) collected active in leaf litter on 20 September 2005 at 1745 h; the second is an unsexed hatchling (UANL-7407) found active on a canyon wall on 20 May 2014 at 1235 h; and the third is an unsexed hatchling (UANL-7408) found active on a canyon wall on 24 May 2014 at 1839 h (unlike the other two specimens, the tail on this one is incomplete). Bryson et al. (2003), Bryson and Lazcano (2005), and Lazcano and Bryson (2010) previously reported some of this information.

Table 1. Morphometric and physiological data on juveniles and gravid females of *Gerrhonotus parvus*. SVL = snout–vent length; TaL = tail length; TL = total length; BM = body mass; BT = body temperature; MT = microhabitat temperature; and RH = relative humidity.

Specimen Number	SVL (mm)	TaL (mm)	TL (mm)	BM (g)	BT (°C)	MT (°C)	RH (%)
Juveniles							
UANL-6785	25.1	28.5	53.6	0.392	16.2	16.8	59.0
UANL-7407	34.3	28.5	74.5	0.478	26.4	26.2	44.0
UANL-7408	38.1	22.8	60.9	0.371	20.4	19.5	74.0
Gravid Females							
UANL-7275	72.6	00.3	72.9	5.9	17.0	16.0	45.0
JBL-049	75.8	110.8	186.5	7.8	27.0	25.1	39.0
JBL-051	75.1	71.3	146.4	6.2	18.2	16.0	67.0
JBL-052	77.6	113.4	191.0	7.5	25.1	25.1	64.2

Information on gravid females.—We also recorded certain morphological characteristics and environmental data on the gravid females of *Gerrhonotus parvus* we encountered. On 30 March 2012 at 1400 h, we collected a female (UANL-7275) on vegetation at Cañon Reflexiones (25°37'50.68"N, 100°41'58.47"W; WGS 84; elev. 1,650 m), from which we recorded certain morphological characteristics and environmental data (Table 1). On another occasion we collected three females (JBL-049, JBL-051, and JBL-052) at Cañon de San Isidro (25.380878°N, -100.309179°W; WGS 84; elev. 1,720 m). We found the first (JBL-049) on 22 April 2015 at 1628 h., the second (JBL-051) on 22 April 2015 at 0945 h., and the third (JBL-052) on 23 April 2015 at 1523 h. The SVL of these females was greater than that reported by (Knight and Scudday, 1985).

Information on oviposition.—Subsequently, we collected oviposition data on *Gerrhonotus parvus*. On 9 May 2012 UANL-7275 (see above) deposited six eggs, and we collected their morphological characteristics (Table 2); the eggs, however, did not develop. Three females from Cañon de San Isidro (JBL-049, JBL-051, and JBL-052) deposited eggs on 3 and 4 June 2015. The first (JBL-049) deposited eight eggs (Table 2); these eggs also did not develop. The second (JBL-051) deposited eight eggs (Table 2); of these, seven eggs hatched. The third (JBL-052) deposited six eggs (Table 2); all of the eggs hatched. We maintained the eggs at temperatures ranging from 24 to 27°C, and the incubation period (starting from 4 to 6 July of 2015) lasted from 31 to 34 days. Thus, a total of 28 eggs were deposited, but only 13 hatched. Since Banda-Leal (2014) reported the largest clutch size known for this species as six, females JBL-049 and JBL-051 now represent the largest recorded clutches for this species.

Table 2. Data on clutches of *Gerrhonotus parvus*.

Specimen Number	Number of Eggs	Length	Width	Mass
UANL-7275	6	12.54–13.57 mm ($\bar{x}$ = 13.06 mm ± 0.05)	7.18–7.36 mm ($\bar{x}$ = 7.27 mm ± 0.05)	0.37–0.41 g ($\bar{x}$ = 0.39g ± 0.01)
JBL-049	8	11.91–13.28 mm ($\bar{x}$ = 12.50 mm ± 0.05)	7.21–7.44 mm ($\bar{x}$ = 7.33 mm ± 0.05)	0.36–0.39 g ($\bar{x}$ = 0.37g ± 0.01)
JBL-051	8	12.45–13.13 mm ($\bar{x}$ = 12.74 mm ± 0.05)	7.27–7.66 mm ($\bar{x}$ = 7.5 5mm ± 0.05)	0.38–0.42 g ($\bar{x}$ = 0.39g ± 0.01)
JBL-052	6	12.54–13.59 mm ($\bar{x}$ = 13.06 mm ± 0.05)	7.19–7.38 mm ($\bar{x}$ = 7.27 mm ± 0.05)	0.37–0.41 g ($\bar{x}$ = 0.42g ± 0.01)

Morphological characteristics of hatchlings.—In this section we provide the morphological characteristics of the hatchling *Gerrhonotus parvus* from females JBL-051 and JBL-052. Before depositing the clutch of eight eggs, we recorded the body mass (BM) of female JBL-051 as 7.4 g., and after egg deposition as 3.9 g. From this female, we obtained morphological characteristics for seven hatchlings (Table 3). Before depositing the clutch of six eggs, we recorded the BM of JBL-052 as 7.5 g., and after egg deposition as 4.94 g. We show the morphological characteristics of these hatchlings in Table 3. After analyzing the measurements of the eggs and comparing them to the size of the corresponding female, we did not find a significant relationship between the SVL of the females ($\bar{x}$ = 75.25 ± 2.08, n = 4) and the number of eggs in the clutch (r_s = 0.366, P = 0.395, n = 4). The average size of the 13 individuals that hatched in the laboratory (TL = 59.6 mm) was slightly smaller than that of the individuals collected from the wild (TL = 63.1 mm). Perhaps UANL-7407 and UANL-7408, which were collected in May, were larger because they hatched the previous year. A detail that might support this assumption is that female UANL-7274, which was collected on 30 March, deposited eggs on 9 May, the month in which the two hatchlings were found. We consider *G. parvus*, along with *G. farri*, *G. lazcanoi*, and *G. lugoi*, as the small-bodied members of the genus. Reproductive behavior remains unknown for *G. farri* and *G. lazcanoi*, and besides the information documented here for *G. parvus*, reproductive behavior (i.e., courtship and copulation, egg size, maternal behavior, and size of the young) is available only for *G. lugoi* (Lazcano et al., 1993).

Table 3. Morphometric data on hatchlihgs of *Gerrhonotus parvus*.

Specimen Number	Number of Hatchlings	SVL	T_aL	TL
JBL-051	7	22.83–27.00 mm ($\bar{x}$ = 25.74 mm ± 0.05)	28.92–41.97 mm ($\bar{x}$ = 36.21 mm ± 0.05)	51.75–68.94 mm ($\bar{x}$ = 61.96 mm ± 0.050.38–0.42 g) ($\bar{x}$ = 0.39 g ± 0.01)
JBL-052	6	22.65–27.2 mm ($\bar{x}$ = 24.71 mm ± 0.05)	21.35–36.51 mm ($\bar{x}$ = 32.44 mm ± 0.05)	44.00–63.66 mm ($\bar{x}$ = 57.15 mm ± 0.05)

We housed the 13 individuals that hatched in our laboratory in glass gallon jars, and provided them with a substrate of long-fibered sphagnum moss. We sprinkled the individuals with water three times a week, and offered them a diet of commercial "pinhead" crickets (Orthoptera: Gryllidae) every other day; we observed most individuals capturing and eating the crickets. Although our group has documented much of the available information on this species, we realize there is still much to learn, just as there is for many of the herpetofaunal species in Mexico. We also realize that we are running a race against time, as population growth and habitat destruction in Mexico continue unabated.

Fig. 1. Various images of *Gerrhonotus parvus.* (A) A female (JBL-052) demonstrating parental care; (B) an individual in the process of hatching; (C) an individual abandoning the egg soon after hatching; and (D) a view of the relative size of a hatchling. © Javier Banda-Leal

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Literature Cited

Banda-Leal, J., D. Lazcano, M. Nevárez-De Los Reyes, and C. Barriga-Vallejo. 2014. Noteworthy records of *Gerrhonotus parvus* in Nuevo Leon, Mexico *Gerrhonotus parvus* Knight and Scudday, 1985 (Squamata: Anguidae): New range extension and clutch size in the state of Nuevo León, Mexico. Check List 10: 950–953.

Bryson, R. W., and D. Lazcano. 2005. *Gerrhonotus parvus*: The Pygmy Alligator Lizard of Nuevo León, Mexico. Reptilia 39: 69–72. (www.reptilia.net/articulos_ing/039.pdf).

Bryson R. W., D. Lazcano, J. Banda-Leal, G. Castañeda-Gaitán, and C. García-de la Peña. 2003. Historia natural de la Lagartija Pigmea (*Elgaria parva*) endémica de Nuevo León, México. Boletín de la Sociedad Herpetológica Mexicana 11: 21–22.

Knight, R. A., and J. F. Scudday. 1985. A new *Gerrhonotus* (Lacertilia: Anguidae) from the Sierra Madre Occidental, Nuevo León, México. The Southwestern Naturalist 30: 89–94.

Lazcano, D., and R. W. Bryson. 2010. *Gerrhonotus parvus* (Pygmy Alligator Lizard). Juvenile size. Herpetological Review 41: 79.

Lazcano, D., A. Contreras-Arquieta, and M. Nevárez-de los Reyes. 1993. Notes on Mexican Herpetofauna 3: Reproductive biology of *Gerrhonotus lugoi*, an anguid lizard from the Cuatro Ciénegas Basin, Coahuila, Mexico. Bulletin of the Chicago Herpetological Society 49: 17–23.

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Iguana iguana **(Linnaeus, 1758). Predation.** The Green Iguana (*Iguana iguana*) is an abundant species with a broad distribution that extends from Sinaloa and Veracruz, Mexico, through Central America and large parts of South America, including offshore islands, as well as in the Lesser Antilles and the Virgin Islands, and also has been introduced into southern Florida (Savage, 2002). This species most frequently is found in lowland forest, near streams, rivers, and lakes, at elevations from sea level to 1,000 m (Köhler, 2008). Numerous vertebrates are known to prey on *I. iguana*, including snakes, birds, and mammals (Greene et al., 1978), and here we report a new mammalian predator for this species.

On 16 January 2017 at 1453 h, an Ocelot (*Leopardus pardalis*) was observed stalking and capturing a young *I. iguana* on a road in Reserva de la Biósfera de Marismas Nacionales de Nayarit, Municipio de Tecuala, Nayarit, Mexico (22°24'90"N, 105°41'09"W; WGS8 4; elev. 5 m), on a sunny day when the ambient temperature was ca. 33°C. The area along the road consisted of halophytic vegetation and low thorn forest, surrounded by large agricultural areas. During the predation event, which lasted ca. 55 sec, the *L. pardalis* slowly emerged from within the cover of vegetation and moved slowly toward the lizard for about 2 m, then darted toward its prey for an additional 7 m and captured the *I. iguana* by the neck, before running off into the vegetation (Fig. 1A–F). The *I. iguana*, which had been basking on the road, apparently was unaware of the threat. To the best of our knowledge this event represents the first published record of *I. iguana* in the diet of *L. pardalis*. Relatively few records of *L. pardalis* are available for Mexico, including from the western part of the country (Villa-Meza et al., 2002; Chávez-León, 2005; Moreno-Arzate et al., 2011; Ahumada-Carrillo et al., 2013). Four published records of *L. pardalis* are available from Nayarit (Patterson et al. 2007); this observation represents the fifth, as well as the first record from the northwestern coastal portion of the state.

Fig. 1. A basking Green Iguana (*Iguana iguana*) is captured by an Ocelot (*Leopardus pardalis*) at Reserva de la Biósfera Marismas Nacionales, Nayarit, Mexico. © Guillermo Vivanco

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Literature Cited

Ahumada-Carrillo, I. T., J. C. Arenas-Monroy, and M. A. Iñiguez. 2013**.** Presence of the Ocelot (*Leopardus pardalis*) in northern Jalisco, Mexico. Revista Mexicana de Biodiversidad 84: 718–721.

Chávez-León, G. 2005. A recent record of *Leopardus pardalis* (Linnaeus, 1758) from Michoacán, México. Revista Mexicana de Mastozoología 9: 123–127.

Greene H. W., G. M. Burghardt, and A. Beverly. 1978. Predation and the defensive behavior of Green Iguanas (Reptilia, Lacertilia, Iguanidae). Journal of Herpetology 12: 169–176.

Köhler, G. 2008. Reptiles of Central America. 2nd ed. Herpeton, Offenbach, Germany.

Moreno-Arzate, E., L. Íñiguez-Dávalos, and C. A. López-González. 2011. High elevation records of Ocelots (*Leopardus pardalis*) in Jalisco, México. Mammalia 75: 387–388.

Patterson, B. D., G. Ceballos, W. Sechrest, M. F. Tognelli, T. Brooks, L. Luna, P. Ortega, I. Salazar, and B. E. Young. 2007. Digital Distribution Maps of the Mammals of the Western Hemisphere, version 3.0. NatureServe, Arlington, Virginia, United States.

Savage, J. M. 2002. The Amphibians and Reptiles of Costa Rica: A Herpetofauna between Two Continents, between Two Seas. The University of Chicago Press, Chicago, Illinois, United States.

Villa-Meza, A., E. Martínez-Meyer, and C. A. López-González. 2002. Ocelot (*Leopardus pardalis*) food habits in a tropical deciduous forest of Jalisco, México. American Midland Naturalist 148: 146–154.

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Xenosaurus grandis **(Gray, 1856). Diet (predation on *Aquiloeurycea*).** The Knob-scaled Lizard, *Xenosaurus grandis*, commonly known as "Tetlina" in the Sierra de Zongolica, Veracruz, Mexico, is a medium-sized (maximum snout–vent length = 130 mm) thermoconformist species with a body temperature that correlates with the substrate and air temperatures (Ballinger et al., 1995). Using a variety of phylogenetic models, Nieto-Montes de Oca et al. (2017) reconstructed a well-resolved phylogeny of all the described and potentially undescribed members of *Xenosaurus*, and concluded that five lineages that traditionally had been recognized as subspecies of *X. grandis* represent distinct evolutionary species. Consequently, *X. grandis* now is regarded as endemic to Mexico, where it occurs in adjacent portions of west-central Veracruz, extreme southeastern Puebla, and north-central Oaxaca (Nieto-Montes de Oca et al., 2017). This species "is found in limestone and volcanic terrain covered with perennial tropical forests, second growth forest, cultivated fields (coffee, banana, and orange plantations), semi-xerophytic and mesophytic vegetation" (Lemos-Espinal et al., 2012: 41). In the Sierra de Zongolica, we have found individuals under the bark of trees.

Ballinger et al. (1995) reported that the diet of *X. grandis* is composed mostly of insects, particularly of the Orders Orthoptera (49%) and Coleoptera (11%), and suggested that this species occasionally consumes small lizards, since Presch (1981) had reported *Sceloporus* sp. in its diet. Lemos-Espinal et al. (2003) reported a similar diet for *X. grandis*, which mainly is composed of insects and those of the Orders Orthoptera and Diptera mostly represented in volume, followed by Coleoptera, but indicated no records of vertebrates in its diet. Lemos-Espinal et al. (2012) also noted the reamains of a teiid (*Ameiva* or *Aspidocelis*) in the stomach contentd of this species.

On 22 August 2015, in a portion of cloud forest along of the Sierra de Zongolica, while conducting a herpetofaunal study at the Reserva Del Bicentenario, Municipio de Zongolica, Veracruz, Mexico (18°39'4.30"N, 97°00'29.17"W; WGS 84; elev. 1,383 m), while taking morphometric measurements on an adult female *X. grandis* the individual deposited some excreta (Fig. 1). An examination of the excreta revealed the anterior portion of the partially digested body of a salamander of the genus *Aquiloeurycea*, which was mixed with the remains of insects of the order Orthoptera (Fig. 2). According to fieldwork undertaken by Lázaro-Vázquez (2015), only two species of salamanders of the genus *Aquiloeurycea* (*A. cephalica* and *A. cafetalera*; Figs. 3, 4) occur in the study area, of which *A. cephalica* is more abundant. For this reason and based on the shape of the salamander, we suspect that it likely is an individual of *A. cephalica*. To our knowledge, this note represents the first report of a salamander of the genus *Aquiloeurycea* in the diet of *X. grandis*, as well as the first record of predation on *Aquiloeurycea* by a member of the family Xenosauridae.

Fig. 1. Excreta of an adult female *Xenosaurus grandis* from Reserva del Bicentenario, Zongolica, Veracruz, Mexico.
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Fig 2. The anterior, partially digested portion of the body of an *Aquiloeurycea*, along with insect remains of the order Orthoptera. The sample is deposited in the Colección Científica del Instituto Tecnológico Superior de Zongolica (catalog number: ITSZ-001-RM).
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Fig. 3. Adult male of *Aquiloeurycea cephalica* from Reserva del Bicentenario, Zongolica, Veracruz, Mexico.
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Fig. 4. An adult male *Aquiloeurycea cafetalera* from Reserva del Bicentenario, Zongolica, Veracruz, Mexico.
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Literature Cited

Ballinger, R. E., J.A. Lemos-Espinal, S. Sanoja-Sarabia, and R. N. Coady. 1995. Ecological observations of the lizard, *Xenosaurus grandis* in Cuautlapan, Veracruz, Mexico. Biotropica. 27: 128–132.

King, W., and F. G. Thompson. 1968. A review of the American lizards of the genus *Xenosaurus* Peters. Bulletin of the Florida State Museum 12: 100–110.

Lázaro-Vázquez, A. 2015. Diversidad de los Plethodontidae (Amphibia: Caudata) en la Reserva del Bicentenario, Zongolica, Veracruz, México. Unpublished Licenciatura thesis, Ingeniería Forestal, Instituto Tecnológico Superior de Zongolica, Zongolica, Veracruz, Mexico.

Lemos-Espinal, J. A., G. R. Smith, and R. E. Ballinger. 2003. Diets of three species of Knob-Scaled Lizards (Genus *Xenosaurus*) from Mexico. The Southwestern Naturalist 48: 119–122.

Lemos-Espinal, J. A., G. R. Smith, and G. R. Woolrich-Piña. 2012. The Family Xenosauridae in Mexico ; La Familia Xenosauridae en México. ECO Herpetological Publishing and Distribution, Rodeo, New Mexico, United States.

Nieto-Montes de Oca, A., A. J. Barley, R. N. Meza-Lázaro, U. O. García-Vázquez, J. G. Zamora-Abrego, R. C. Thomson, and A. D. Leaché. 2017. Phylogenomics and species delimitation in the knob-scaled lizards of the genus *Xenosaurus* (Squamata: Xenosauridae) using ddRADseq data reveal a substantial underestimation of diversity. Molecular Phylogenetics and Evolution 106: 241–253.

Presch, W. 1981. Life History Notes. Sauria. *Xenosaurus grandis*, Food. Herpetological Review. 12: 81.

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Reptilia: Squamata (Snakes)

***Atropoides nummifer* (Rüppell, 1845). Cannibalism.** The Mexican Jumping Pitviper, *Atropoides nummifer*, is distributed in the Mexican states of Querétaro, San Luis Potosí, Hidalgo, Puebla, Veracruz, and Oaxaca. (Campbell and Lamar, 2004; López et al., 2006). Campbell and Lamar (2004: 285) noted that this species "has a muddled taxonomic history, and at one time or another every other species of *Atropoides* has been confused with it," and thus many of the food items attributed to *A. nummifer* (*sensu lato*) actually pertain to other species. The diet of members of this genus has been reported to consist of orthopterans, crayfish, lizards, and rodents (Campbell and Lamar, 2004; McCranie, 2011).

On 25 August 2017 at 1632 h, at Colonia Agrícola Rincón de las Flores, Tezonapa, Veracruz, Mexico (18°42'55.06"N; 96°50'54.00"W; WGS 84; elev. 1,118 m), we encountered what appeared to be an adult male *A. nummifer* (total length ~720 mm; Fig. 1) that soon after defecated. The snake was not collected, but a photo voucher is deposited at the University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8941.

We collected the excreta, and later conducted a fecal analysis that revealed the remains of ventral scales, dorsal scales, and cranial bones (quadrate, maxilla, and fangs) of a snake of the family Viperidae (Fig. 2). Vásquez-Cruz (2015) reported two species of vipers occurring this area (*A. nummifer* and *Bothrops asper*), so we compared the dorsal scales of both species and found the ones in the excreta similar to those of *A. nummifer*, thereby confirming the event as a case of cannibalism (Fig. 3). To the best of our knowledge this note represents the first record of cannibalism in the diet of *A. nummifer*, as well as the first report of a snake in the diet of members of this genus.

Fig. 1. A male *Atropoides nummifer* (UTADC-8941) from Colonia Agrícola Rincón de las Flores, Tezonapa, Veracruz, Mexico. © Víctor Vásquez-Cruz

Fig. 2. A fecal analysis of the material passed by the *Atropoides nummifer* revealed the remains of a snake of the family Viperidae. © Arleth Reynoso-Martínez

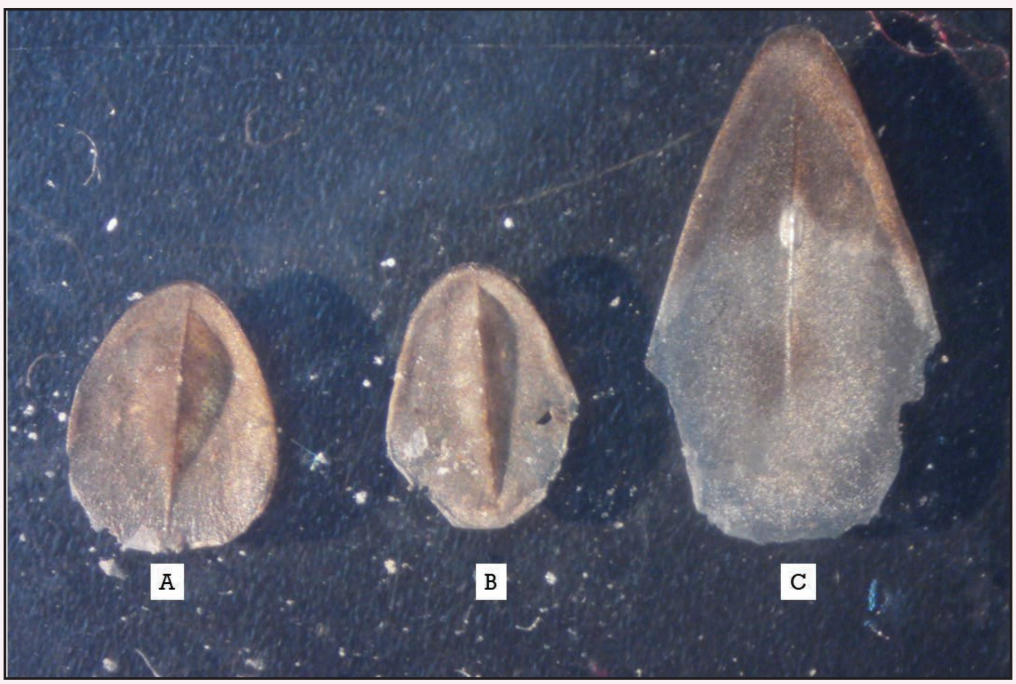

Fig. 3. A comparison of individual dorsal scales from *Atropoides nummifer* (A), a scale found in the excreta (B) and one from *Bothrops asper* (C). The similarity of scales A and B confirms the identification of the ingested snake as *A. nummifer*, and the event as a case of cannibalism. © Víctor Vásquez-Cruz

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Literature Cited

Campbell J. A., and W. W. Lamar. 2004. The Venomous Reptiles of the Western Hemisphere. 2 Volumes. Comstock Publishing Associates, Cornell University Press, Ithaca, New York, United States.

López González, C. A., D. R. Aceves Lara, and R. E. Jiménez Maldonado. 2006 *Atropoides nummifer* (Ruppell,1845) (Serpentes: Viperidae), nuevo registro para la ofidiofauna de Querétaro, México. Acta Zoológica Mexicana 22: 133–134.

McCranie, J. R. 2011. The Snakes of Honduras: Systematics, Distribution, and Conservation. Contributions to Herpetology, Volume 26, Society for the Study of Amphibians and Reptiles, Ithaca, New York, United States.

Vásquez-Cruz, V. 2015. Anfibios y Reptiles de la Colonia Agrícola Rincón de las Flores, Tezonapa, Unpublished Licenciatura thesis, Facultad de Ciencias Biológicas y Agropecuarias, Universidad Veracruzana. Amatlán de los Reyes, Veracruz, Mexico.

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***Boa imperator* Daudin, 1803. Diet.** The range of the Common Boa Constrictor, *Boa imperator*, extends from central Tamaulipas and Oaxaca, Mexico, southward through Central America and northwestern Colombia (Card et al, 2016). This species formerly was regarded as *B. constrictor*, for which the literature is extensive. *Boa imperator* occurs in several habitats and has been reported to feed on a variety of lizards, birds, and mammals. McCranie (2011: 64) noted some of the prey items in Central America as "coatis, arboreal anteaters, rabbits, tree porcupines, raccoons, opossums, monkeys, squirrels, bats, ocelots, juvenile deer, birds, dogs and farm animals (also see Greene [1983], Savage [2002], and Solórzano [2004] and references therein).

On 2 July 2016 at Lepaterique, Departamento de Francisco Morazán, Honduras (14°04'00.73"N, 87°28'01.97"W; WSG 84; elev. 1,485 m), local people found a *B. imperator* (total length [TL] = 162 cm, body mass [BM] = 2.3 kg.) and to prevent the snake from being killed they rescued the individual and brought it to a zoo, Zoológico Rosy Walther, in Tegucigalpa. The snake recently had consumed a large prey item, and the stress from being captured apparently caused it to try and regurgitate its meal (Fig. 1A). Unfortunately, the snake died by the time it arrived at the zoo.

A necropsy of the *B. imperator* subsequently was conducted, which revealed the cause of death as internal injuries to the body of the snake produced when attempting to regurgitate its prey (Fig 1B). Although the prey item was partially digested, it was identified as a female Common Opossum, *Didelphis marsupialis* (TL = 91 cm, tail length = 42 cm, BM = 1.32 kg.). Interestingly, a similar episode occurred in Costa Rica in 1964, when local people captured a *Boa imperator* that died while attempting to regurgitate a *D. marsupialis* (L. Porras, pers. comm.). Greene (1983: 383) also noted that an "adult boa in Panama was evidently killed by an arboreal anteater (*Tamandua tetradactyla*) that it had partially swallowed." Thus, the consumption of large prey items by *B. imperator* might be more life threatening to individuals of this species than previously reported in the literature.

Fig. 1. (A) A *Boa imperator* found in Lepaterique, Departamento de Francisco Morazán, Honduras, that later died while attempting to regurgitate a *Didelphis marsupialis*; and (B) an image of the necropsy that was performed.

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Literature Cited

Card, D. C., D. R. Schield, R. H. Adams, A. B. Corbin, B. W. Perry, A. L. Andrew, G. I. M. Pasquesi, E. N. Smith, T. Jezkova, S. M. Boback, W. Booth, and T. A. Castoe. 2016. Phylogeographic and population genetic analyses reveal multiple species of *Boa* and independent origins of insular dwarfism. Molecular Phylogenetics and Evolution 102: 104–116.

Greene, H. W. 1983. *Boa constrictor* (Boa, Béquer, Boa constrictor). Pp. 380–382 *In* D. H. Janzen (Ed.), Costa Rican Natural History. The University of Chicago Press, Chicago, Illinois, United States.

McCranie, J. R. 2011. The Snakes of Honduras: Systematics, Distribution, and Conservation. Contributions to Herpetology, Volume 26, Society for the Study of Amphibians and Reptiles, Ithaca, New York, United States.

Savage, J. M. 2002. The Amphibians and Reptiles of Costa Rica: A Herpetofauna between Two Continents, between Two Seas. The University of Chicago Press, Chicago, Illinois, United States.

Solórzano, A. 2004. Serpientes de Costa Rica: Distribución, Taxonomía e Historia Natural / Snakes of Costa Rica: Distribution, Taxonomy, and Natural History. Instituto Nacional de Biodiversidad (INBio), Santo Domingo de Heredia, Costa Rica.

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Thamnophis validus **(Kennicott, 1860). Predation by a Great Blue Heron (*Ardea herodias*).** The endemic West Coast Gartersnake, *Thamnophis validus*, is a medium-sized (mean snout–vent length 0.774 m in males, and 0.867 m in females) aquatic species that inhabits the Pacific coast of Mexico from the states of Sonora to Guerrero, and the Cape Region of the Baja California Peninsula (Conant, 1969; McCranie and McAllister, 1988; de Queiroz et al., 2001). Conant (1969) conducted early anecdotal observations on the natural history of this species, and later studies provided additional information on its ecology (Arnold and Wassersug, 1978; Dunson, 1980; McCranie and McAllister, 1988; Rossman et al., 1996; de Queiroz et al., 2001; de Queiroz and Lawson, 2008). Currently, the International Union for Conservation of Nature (IUCN) considers *T. validus* under the category of Least Concern, and indicated the loss of wetland habitat for small-holder farming, wood collection, and human settlement as major threats (Ponce-Campos and García-Aguayo, 2007). Some natural history aspects of this species, however, remain unknown; in particular, we are not aware of any study reporting its natural predators. Conant (1969: 100) noted, "Semiaquatic birds must be important predators upon *validus*, for they were in evidence, sometimes in great numbers, at many of the localities where this snake was found." Therefore, herein we report the first record of an adult Great Blue Heron, *Ardea herodias* Linnaeus, 1758, preying on an adult female *T. validus*. *Ardea herodias* is one of the most widespread and adaptable wading birds in North America, and its diet is known to include fishes, frogs, salamanders, lizards, snakes, turtles, shrimp, crabs, crayfish, arthropods (land and aquatic), other birds, and small mammals (Terres, 1991; Escobedo-Galván et al., 2017).

On 23 October 201, at Marina Vallarta Club de Golf, Puerto Vallarta, Jalisco, Mexico (20°40'7.46"N, 105°15'39.42"W; datum: WGS 84; elev. < 3 m), one of us (FMC) observed and photographed an adult *A. herodias* preying on adult female of *T. validus* (Fig. 1). The wading bird approached the snake in a water hazard, and suddenly grabbed it with its beak. After struggling with its prey for few minutes, the wading bird ingested it while the snake was alive (Fig. 1). This observation not only confirms Conant's speculation about semiaquatic birds preying on *T. validus*, but their method for capturing snakes might differ depending on the species of bird (e.g., Solórzano and Kastiel, 2015).

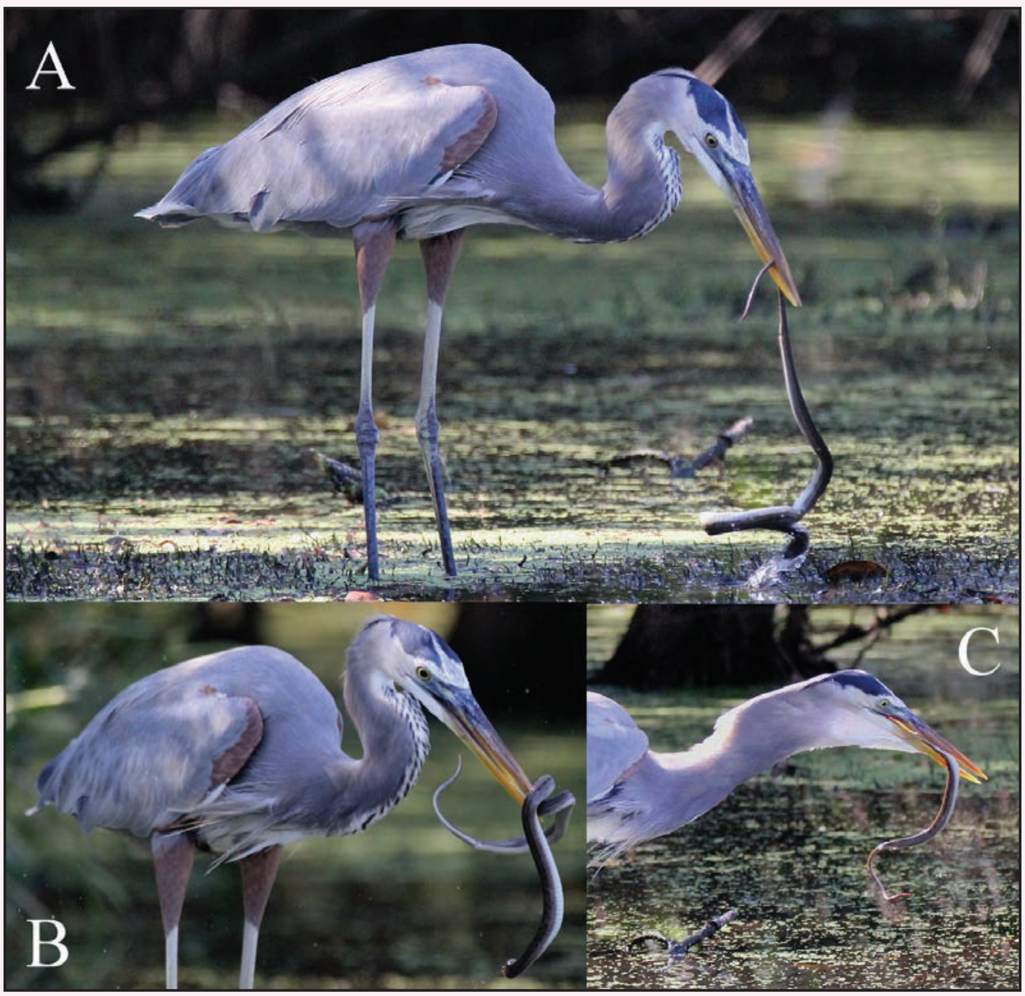

Fig. 1. A Great Blue Heron (*Ardea herodias*) capturing (A, B) and swallowing (C) a Mexican West Coast Gartersnake (*Thamnophis validus*) at Marina Vallarta Club de Golf, Puerto Vallarta, Jalisco, Mexico. © Frank Mc Cann

Literature Cited

Arnold, S. J., and R. J. Wassersug. 1978. Differential predation on metamorphic anurans by garter snakes (*Thamnophis*): social behavior as a possible defense. Ecology 59: 1,014–1,022.

Conant, R. 1969. A review of the water snakes of the genus *Natrix* in Mexico. Bulletin of the American Museum of Natural History 142: 1–140.

de Queiroz, A., and R. Lawson. 2008. A peninsula as an island: multiple forms of evidence for overwater colonization of Baja California by the gartersnake *Thamnophis validus*. Biological Journal of the Linnean Society 95: 409–424.

de Queiroz, A., C. Henke, and H. M. Smith. 2001. Geographic variation and ontogenetic change in the diet of the Mexican Pacific Lowlands Garter Snake, *Thamnophis validus*. Copeia 2001: 1,034–1,042.

Dunson, W. A. 1980. The relation of sodium and water balance to survival in seawater of estuarine and freshwater races of the snakes *Nerodia fasciata*, *N. sipedon*, and *N. valida*. Copeia 1980: 268–280.

Escobedo-Galván, A. H., F. Mc Cann, M. Vásquez-Bolaños, G. Casas-Andreu, and F. G. Cupul-Magaña. 2017. Nature Notes. *Trachemys ornata* (Gray, 1821). Predation and reproduction. Mesoamerican Herpetology 4: 654–656.

McCranie, J. R., and C. T. McAllister. 1988. *Nerodia valida*. Catalogue of American Amphibians and Reptiles 431.1–431.3.

Ponce-Campos, P., and A. García-Aguayo. 2007. *Thamnophis valida*. The IUCN Red List of Threatened Species 2007: e.T63995A12728215. (www.dx.doi.org/10.2305/IUCN.UK.2007.RLTS.T63995A12728215.en; accessed 30 October 2017).

Rossman, D. A., N. B. Ford, and R. A. Seigel. 1996. The Garter Snakes: Evolution and Ecology. University of Oklahoma Press, Norman, Oklahoma, United States.

Solórzano, A., and T. Kastiel. 2015. Nature Notes. *Hydrophis platurus*. Predation by a Wood Stork (*Mycteria americana*). Mesoamerican Herpetology 2: 121-123.

Terres, J. K. 1991. The Audubon Society Encyclopedia of North American Birds. Wings Books, New York, New York, United States.

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***Ungaliophis panamensis* Schmidt, 1933. Diet.** The Southern Bromeliad Boa, *Ungaliophis panamensis*, a member of the family Charinidae (Pyron et al., 2014), is a medium sized snake distributed in Lower Central America (southern Nicaragua to Panama) and western Colombia (Wallach et al., 2014). Although Savage (2002: 570) noted that *U. panamensis* is "restricted to the upper canopy layer of undisturbed forest, and like other denizens of that zone it remains rarely collected," apparently it tolerates some degree of development, because I am aware that on several occasions this species has been found within human structures. In nature, the diet of *U. panamensis* is known to consist of frogs and lizards (also see Solórzano [*This Issue*]; in captivity, most individuals will feed on lizards and small mice (Corn, 1974; Solórzano, 2004; pers. observ.).

On 18 August 2017 at ca. 1000 h, in the vicinity of Platanillo de Pérez Zeledón, Provincia de San José, Costa Rica (9.28816°N, -83.8027°W; WGS 84) Diego Santamaria González observed and photographed an adult female *U. panamensis* constricting and attempting to swallow a young House Wren (*Troglodytes aeon*) inside his home. After observing the event for some time and realizing that the snake was unable to swallow the bird, he brought both to Parque Reptilandia to see if the snake could be identified; by that time, however, the bird had expired. To my knowledge, this is the first report of *U. panamensis* preying on a bird, although because of this species' primarily arboreal lifestyle such an event might be a common occurrence.

Fig. 1. An *Ungaliophis panamensis* subduing and attempting to swallow a young House Wren (*Troglodytes aeon*) inside a private residence in the vicinity of Platanillo de Pérez Zeledón, Provincia de San José, Costa Rica.

Literature Cited

Corn, M. J. 1974. Report on the first collection of *Ungaliophis panamensis* from Costa Rica. Caribbean Journal of Science 14: 167–175.

Pyron, R. A., R. G. Reynolds, and F. Burbrink. 2014. A taxonomic revision of boas (Serpentes: Boidae). Zootaxa 3,846: 249–260.

Solórzano, A. 2004. Serpientes de Costa Rica: Distribución, Taxonomía e Historia Natural / Snakes of Costa Rica: Distribution, Taxonomy, and Natural History. Instituto Nacional de Biodiversidad (INBio), Santo Domingo de Heredia, Costa Rica.

Solórzano, A. 2017. Nature Notes. *Ungaliophis panamensis* Schmidt, 1933. Diet. Mesoamerican Herpetology 4: 940–941.

Wallach, V., K. L. Williams, and J. Boundy. 2014. Snakes of the World: A Catalogue of Living and Extinct Species. CRC Press, Taylor & Francis Group, Boca Raton, Florida, United States.

Quetzal Dwyer

Parque Reptilandia, APDO 692-8000, San Isidro el General, San José, Costa Rica.

***Ungaliophis panamensis* Schmidt, 1933. Diet**. The Southern Bromeliad Boa, *Ungaliophis panamensis*, is a relatively uncommon species that inhabits evergreen forests from southeastern Nicaragua to northwestern Colombia, at elevations from near sea level to 2,100 m (Savage, 2002; Wallach, 2014; Ray, 2015). In Costa Rica, this species is found along the Caribbean versant, and on the Pacific versant it has been recorded in several isolated localities, but mostly in the central and southern parts of the country (Solórzano 2004, 2006). This species is secretive and little information is available on its natural diet, which apparently consists of frogs and lizards; in captivity, however, individuals have been reported to feed on geckos and small mice (Solórzano, 2004). Dwyer (*This Issue*), however, is reporting an additional food item for this species.

On 11 October 1989 at 1935 h, one of us (EC) observed an individual of *U. panamensis* (total length ~450 mm) at Parque Nacional Manuel Antonio, Quepos, Provincia de Puntarenas, Costa Rica (9.381841°N, -84.142893°W; WGS 84; elev. 26 m) constricting and feeding on a bat (*Carollia* spp., Phyllostomatidae) on the rafters of the park's guardhouse (Fig. 1A). The observation lasted for about 1 h, until the snake finished consuming its meal (Fig. 1B). This note represents the first report of a bat in the diet of *U. panamansis*.

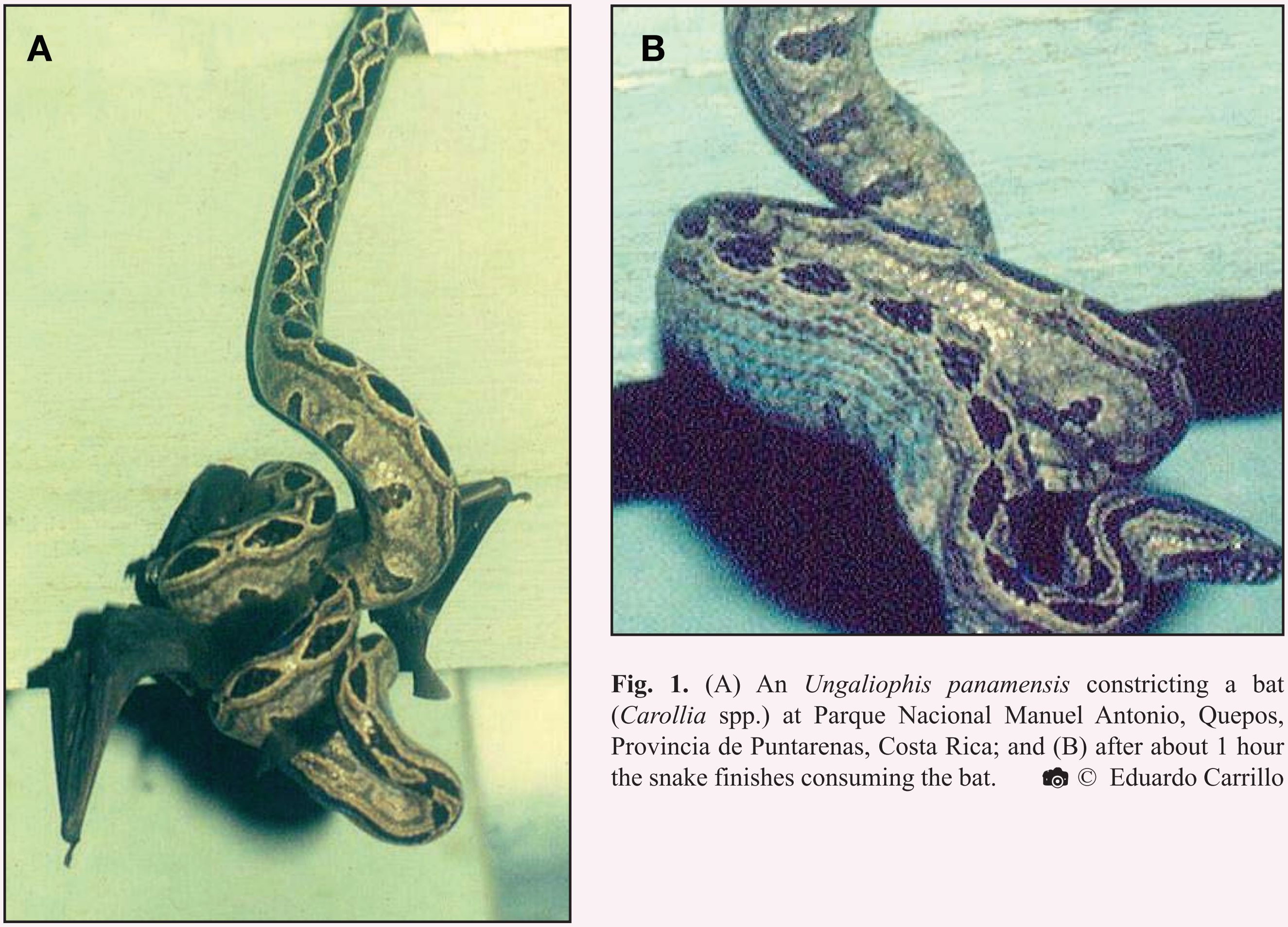

Fig. 1. (A) An *Ungaliophis panamensis* constricting a bat (*Carollia* spp.) at Parque Nacional Manuel Antonio, Quepos, Provincia de Puntarenas, Costa Rica; and (B) after about 1 hour the snake finishes consuming the bat. © Eduardo Carrillo

Acknowledgments.—We thank Mahmood Sasa for commenting on this note.

Literature Cited

Dwyer, Q. 2017. Nature Notes. *Ungaliophis panamensis* Schmidt, 1933. Diet. Mesoamerican Herpetology 4: 939–940.

Ray, J. M. 2015. Geographic Distribution. *Ungaliophis panamensis* (Southern Bromeliad Boa). Herpetological Review 46: 64.

Savage, J. M. 2002. The Amphibians and Reptiles of Costa Rica: A Herpetofauna between Two Continents, between Two Seas. The University of Chicago Press, Chicago, Illinois, United States.

Solórzano, A. 2004. Serpientes de Costa Rica: Distribución, Taxonomía e Historia Natural / Snakes of Costa Rica: Distribution, Taxonomy, and Natural History. Instituto Nacional de Biodiversidad (INBio), Santo Domingo de Heredia, Costa Rica.

Solórzano, A. 2006. Snakes of the Osa Peninsula. Reptilia 48: 30–34.

Wallach, V., K. L. Williams, and J. Boundy. 2014. Snakes of the World: A Catalogue of Living and Extinct Species. CRC Press, Taylor & Francis Group, Boca Raton, Florida, United States.

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Reptilia: Testudines

***Kinosternon integrum*. Carapace and plastron coloration.** The Mexican Mud Turtle, *Kinosternon integrum*, is distributed on the Pacific versant of Mexico from central Sonora to the Río Verde in Oaxaca, and also throughout the central and southern portions of the Mexican Plateau (Legler and Vogt, 2013; Lemos-Espinal and Dixon, 2013). Iverson et al. (1998: 652.1–2) reported that the carapace coloration of *K. integrum* as highly variable, "ranging from light horn color through almost every shade of brown to nearly black," and that the "plastron and bridges are pale to yellow orange with seams more darkly marked." Herein, I describe an additional coloration observed in two individuals from western Mexico.

On 25 May 2015 at 1015 h, I observed a juvenile *K. integrum* at Rancho Agua Zarca, Municipio de Compostela, Nayarit, Mexico (21.146135°N, 104.932143°W; WGS 84; elev. 675 m). Both the carapace and plastron of this individual were mahogany red (Fig. 1). Subsequently, on 10 January 2016 at 1146 h, I observed an adult of this species at Marismas Nacionales on Ejido la Puntilla, Municipio de Tecuala, Nayarit, Mexico (22.436981°N, 105.706024°W; WGS 84; elev. 4 m), with a mahogany red carapace and plastron (Fig. 2). Neither of the turtles was collected. The prevalence of this color pattern in individuals of *K. integrum* from Nayarit requires further investigation. I used Köhler (2012) to determine the coloration of the carapace and plastron of the turtles.

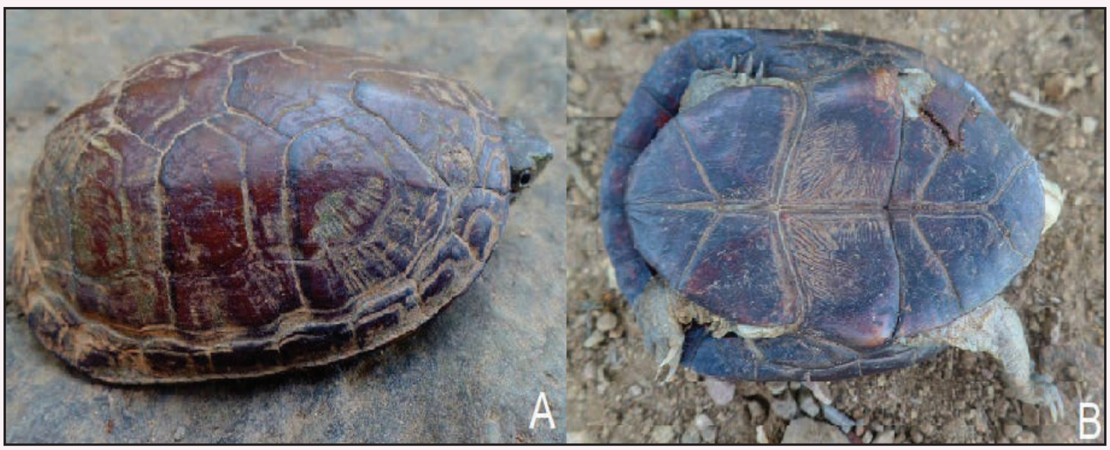

Fig. 1. A juvenile *Kinosternon integrum* from Compostela, Nayarit, showing a mahogany red carapace (A) and plastron (B).

Fig. 2. An adult *Kinosternon integrum* from La Puntilla, Tecuala, Nayarit, which also showed a mahogany red carapace (A, B) and plastron.

Literature Cited

Iverson, J. B., C. A. Young, and J. F. Berry. 1998. *Kinosternon integrum* LeConte (Mexican Mud Turtle). Catalogue of American Amphibians and Reptiles 652.1–652.6.

Köhler G. 2012. Color Catalogue for Field Biologists, Bilingual Edition. Herpeton, Offenbach, Germany.

Legler, J. M., and R. C. Vogt. 2013. The Turtles of Mexico: Land and Freshwater Forms. University of California Press, Berkeley, California, United States.

Lemos-Espinal, J. A., and J. R. Dixon. 2013. Amphibians and Reptiles of San Luis Potosí. Eagle Mountain Publishing, LC, Eagle Mountain, Utah, United States.

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DISTRIBUTION NOTES

Amphibia: Anura

Eleutherodactylus planirostris (Cope, 1862) (Anura: Eleutherodactylidae), additional and new departmental records for Honduras

The invasive Greenhouse Frog, *Eleutherodactylus planirostris*, initially was detected in Honduras in 2007, in the city of San Pedro Sula, department of Cortés (McCranie et al., 2008). By 2014 this species had been recorded on Isla Guanaja in the department of Islas de la Bahía (McCranie and Valdés-Orellana, 2014), as well as in the departments of Atlántida, Francisco Morazán, and La Paz (McCranie and Gutsche, 2014; Solís et al., 2014). Herein, we provide two new departamental records for *E. planirostris* in Honduras, as well as an additional location for this species in the department of Cortés. All of our records are from individuals found in urban areas. We deposited the specimens in the Vertebrate Collection at the Universidad Nacional Autónoma de Honduras en el Valle de Sula (UNAH-VS). The geographic coordinates provided below are in datum WGS 84.

YORO: El Progreso (15°23'34"N, 87°47'38"W); elev. 62 m; José Aníbal Vindel. On 30 March 2017, JAV found two individuals (UVS V563–64) during the day, under construction debris (Fig 1A). Subsequently, on 29 August 2017 we heard several *E. planirostris* calling at ca. 0700 h, and found a juvenile in a private garden (15°24'14"N, 87°48'40"W; elev. 32 m), but the frog was not collected. The two specimens represent the first and second records of this species for this department, and the 6th and 9th for the country, and are located 30 and 27 km, respectively, to the SE from the first reported locality. SANTA BÁRBARA: Santa Bárbara (14°55'05"N, 88°14'18"W); elev. 251 m. On 23 July 2017 and 23 August 2017 at ca. 2300 h and 2100 h, respectively, heard several for *E. planirostris* calling from a residential garden. Both records represent the first and second for this department, and the 7th and 8th for the country, and are located 70 km to the SW from the first reported locality. CORTÉS: San Pedro Sula (15°32'39"N, 87°01'36"W; elev. 80 m. From May of 2016 to September of 2017, we encountered individuals of *E. planirostris* in seven different neighborhoods in the northwestern portion of the city (UVS V540, V593–V598). We found most individuals during the day in gardens and sewer systems around homes (Fig. 1B) and heard others vocalizing at night, which confirms the presence of a well-established population of this species in the city.

Fig. 1. (A) An introduced *Eleutherodactylus planirostris* (UVS V563) from El Progreso, Deparamento de Yoro, Honduras.
© Carlos Andino

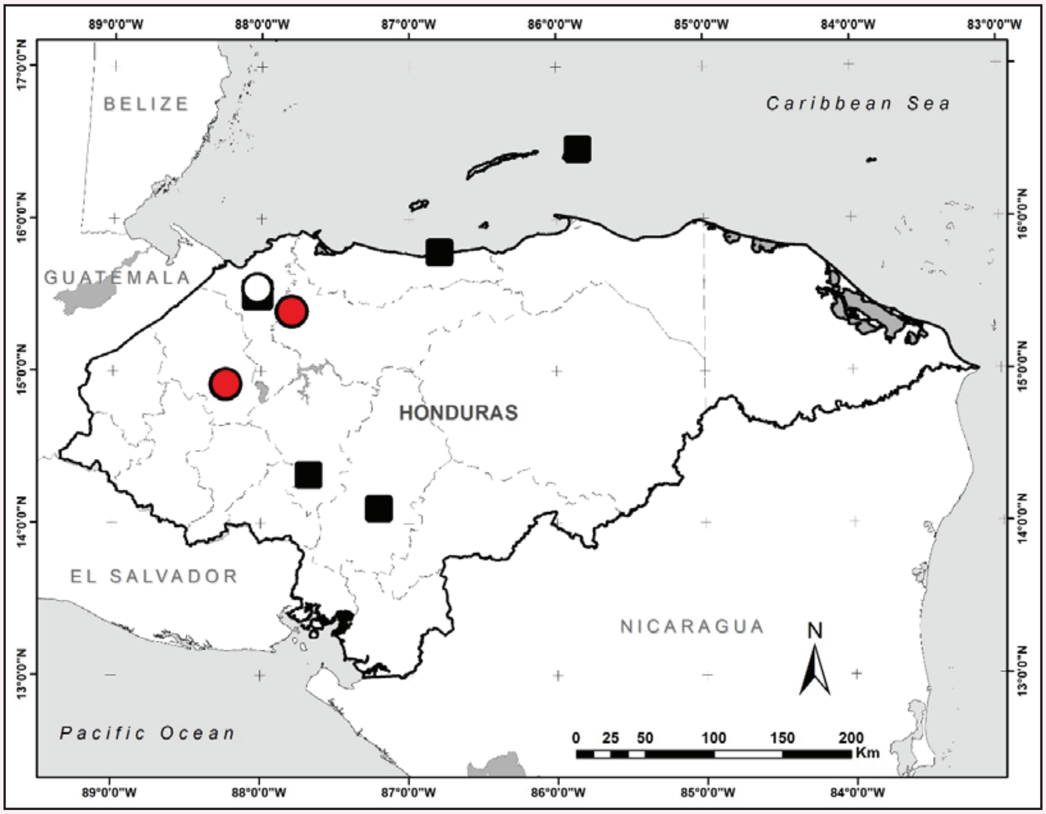

Fig. 2. New and historical locations for the invasive Greenhouse Frog, *Eleutherodactylus planirostris*, in Honduras. The red circles represent new departmental records; the white circle is a previously known location with additional information provided in this note; and solid squares are based on published records (McCranie et al., 2007; McCranie and Gutsche, 2014; McCranie and Valdés-Orellana, 2014, and Solis et al., 2014). Map by Luis Herrera-B. (datum WGS 84).

Acknowledgments—We thank Roberto Campos Baide, in Santa Bárbara, for allowing us to stay at his home while searching for this species, and Mario Solís for commenting on this note. The permit for this study was issued by the Departamento de Vida Silvestre, Instituto Hondureño de Conservación y Desarrollo Forestal, Áreas Protegidas y Vida Silvestre (ICF), file number ICF 555-17.

Literature Cited

McCranie, J. R., and A. Gutsche. 2014. Geographic Distribution. *Eleutherodactylus* (*Euhyas*) *planirostris* (Greenhouse Frog). Herpetological Review 45: 653.

McCranie, J. R., and L. Valdéz-Orellana. 2014. New island records and updated nomenclature of amphibians and reptiles from the Islas de la Bahía, Honduras. Herpetology Notes 7: 41–49.

McCranie, J. R., J. R. Collart, F. E. Castañeda, and J. M. Solís. 2008. Geographic Distribution. *Eleutherodactylus* (*Euhyas*) *planirostris* (Greenhouse Frog). Herpethological Review 39: 362–363.

Solís, J. M., J. D. Laínez, and M. Bardales-Salmerón. 2014. Distribution Notes. *Eleutherodactylus planirostris* (Cope, 1862). Mesoamerican Herpethology 1: 292.

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Amphibia: Caudata

Family Plethodontidae

***Pseudoeurycea nigromaculata* (Taylor, 1941).** MEXICO: VERACRUZ: Municipio de Zongolica, Paso del Águila (18°40'14.98"N, 96°59'44.97"W; WGS 84); elev. 1,310 m; 11 February 2016; Fresvinda Laura Hernández-Atlahua. The salamander was found active in leaf litter at 0000 h, along a trail in cloud forest where the vegetation consists mostly of *Liquidambar*, *Quercus*, and *Cupressus* trees. The specimen is deposited in the Colección Científica del Instituto Tecnológico Superior de Zongolica, Veracruz (ITSZ-A-091; collecting permit SEMARNAT-08-049, Oficio Núm.SGPA/DGVS/02924/15 issued to Erasmo Cázares-Hernández and collaborators).

MEXICO: VERACRUZ: Municipio de Zongolica, El Tenango (18°39'57.06"N, 96°59'31.89"W; WGS 84); elev. 1,401m; 12 May 2016; Ángel Iván Contreras-Calvario, Abigail Mora-Reyes, and Magdaleno Domínguez-Gálvez. The salamanders were found on epiphytic plants in *Quercus* trees at a height of 2–3 m between 2200 and 2345 h, in a private ranch located in cloud forest where the vegetation consists mostly of *Liquidambar*, *Quercus*, and *Cupressus* trees. The specimens (see Fig. 1) are deposited in the Colección Científica del Instituto Tecnológico Superior de Zongolica, Veracruz (ITSZ-A-092, 093, 094, 095; collecting permit SEMARNAT-08-049, Oficio Núm. SGPA/DGVS/02924/15 issued to Erasmo Cázares-Hernández and collaborators).

MEXICO: VERACRUZ: Municipio de Tezonapa, Unión y Progreso (18°38'44"N, 96°51'32"W; WGS 84); elev. 1,326 m; 6 June 2016, Mauro Daniel Castro-Morales. Three individuals were found in leaf litter at 2130 h, in a transitional area between cloud forest and tropical rainforest. The specimens (see Fig. 2) are deposited in the Colección Científica del Instituto Tecnológico Superior de Zongolica, Veracruz (ITSZ-A-U-003, ITSZ-A-U-009, ITSZ-A-U-011; collecting permit SEMARNAT-08-049, Oficio Núm. SGPA/DGVS/02924/15 issued to Erasmo Cázares-Hernández and collaborators).

The above specimens represent three locality records from the state of Veracruz, in two municipalities along the Sierra de Zongolica, with the closest published record from Cerro Chicahuaxtla, Cuautlapan, Veracruz (Taylor 1941); the other published records are from Volcán de San Martín, Reserva de Los Tuxtlas, Veracruz, Veracruz (Shannon and Werler, 1955) and Acultzingo, Veracruz (Mendoza-Hernández and García-Vázquez, 2010). The new localities reported herein maintain *P. nigromaculata* as endemic to the state of Veracruz, and extend the distribution 20.5 km to the S from the Cerro Chicahuaxtla record. These new records, along with the one from Acultzingo (Mendoza-Hernández and García-Vázquez, 2010), suggest that this species might occur in other areas with similar habitats, including the state of Puebla, and that the distribution of this species might be more extensive than current records indicate.

Fig. 1. A specimen of *Pseudoeurycea nigromaculata* (ITSZ-A-094) from El Tenango Municipio de Zongolica, Veracruz, Mexico.
© Ángel Iván Contreras-Calvario

Fig. 2. A specimen of *Pseudoeurycea nigromaculata* (ITSZ-A-U-009) from Unión y Progreso, Municipio de Tezonapa, Veracruz, Mexico. © Erasmo Cázares-Hernández

Acknowledgments.—We thank Luis Canseco-Márquez and Cynthia Grisell Ramírez-González for confirming the identification of the species, and Ramiro Sánchez-Uranga (General Director) and Yamil Vargas-Rivera (Deputy Director of Research) at the Instituto Tecnológico Superior de Zongolica for supporting our internal research projects.

Literature Cited

Mendoza-Hernández, A. A., and U. O. García-Vázquez. 2010. *Pseudoeurycea nigromaculata* (Black-spotted Salamander). Predation. Herpetological Review 41: 191.

Shannon, F. A., and J. E. Werler. 1955. Notes on amphibians of the Los Tuxtlas Range of Veracruz, Mexico. Transactions of the Kansas Academy of Science 58: 360–386.

Taylor, E.H. 1941. New amphibians from the Hobart Smith Mexican collections. University of Kansas Science Bulletin. 27:141–167.

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Reptilia: Squamata (Lizards)

First record of *Corytophanes hernandesii* (Wiegmann, 1831) (Squamata: Corytophanidae) from the state of Yucatán, Mexico

Lizards of the Neotropical genus *Corytophanes* are characterized by a moderate size (maximum snout–vent length [SVL] = 125 mm), a long tail (ca. 2.0–2.5 times the SVL), a laterally compressed body, and can be distinguished from all other members of the family Corytophanidae by presence of a triangular-shaped cephalic casque that projects posteriorly past the head (Towsend et al., 2004). This genus is composed of three species: *C. cristatus* (Merrem, 1820), *C. hernandesii* (Wiegmann, 1831), and *C. percarinatus* Duméril, 1856 (Towsend et al., 2004; Vieira et al., 2005; Köhler, 2008; Ramos-Galdamez et al., 2016); the first two species are found in the Yucatan Peninsula (Lee, 1996; Köhler, 2008; González-Sánchez et al., 2017).

Hernandez's Helmeted Basilisk (*C. hernandesii*) occurs at low and moderate elevations (near sea level to 1300 m) on the Atlantic versant from southeastern San Luis Potosí, Mexico, to northwestern Honduras (McCranie et al., 2004). In the Mexican Yucatan Peninsula, its distributional range is known from some localities in southern Campeche and extends northward (perhaps discontinuously) through the forests of Quintana Roo (Lee, 1996; Calderón et al., 2003; McCranie et al., 2004; Köhler, 2008). This species, however, has not been reported from the state of Yucatán (González-Sánchez et al., 2017). Herein, we provide the first report its presence in the state.

On 3 August 2017 at ca. 1530 h, an adult *C. hernandesii* (Fig.1) was found 5.5 km S of X-Can, Municipio de Chemax, Yucatán, Mexico (20°48'33.0"N, 87°40'11.6"W; WGS 84; elev. 26 m). The lizard was perched on a tree trunk, at ca. 1.5 m from the ground, in undisturbed semi-evergreen tropical forest. The canopy of the forest reaches an average of 11 m, with a few prominent trees attaining a height of 15 m. The main plants in the area are *Vitex gaumeri*, *Albizia tomentosa*, *Sabal mexicana*, and *Astronium graveolens*, as well as epiphytic orchids such as *Catasetum integerrimum*, *Epidendrum stamfordianum*, *Lophiaris teaboana*, and *Vanilla odorata* (Ejido X-Can, 2017). The individual was not collected. A photograph of the lizard is deposited in the University of Texas at El Paso (UTEP)'s Biodiversity Collections, Herpetology Observations (UTEPObs:Herp:122). This photo voucher represents both the first record for this species and for the genus *Corytophanes* in the state of Yucatán (Lee, 1996; González-Sánchez et al., 2017), and is located ca. 10 km SW (airline distance) of the closest record in the vicinity of "Pueblo Nuevo X-Can," Quintana Roo (Lee, 1996).

Fig. 1. A *Corytophanes hernandesii* (UTEPObs:Herp:122) photographed at 5.5 km S of X-Can, Municipio de Chemax, Yucatán, Mexico.
© José Adrián Cimé-Pool

Acknowledgments.—We thank Teresa J. Mayfield for kindly providing the photo voucher number. We also thank Carlos Requena and Martín Uc for field assistance. Fieldwork was funded by Fondo Mexicano para la Conservación de la Naturaleza, A.C. (FMCN), under the project "Apoyo a micro, pequeñas y medianas empresas que operan en entornos forestales en ejidos - implementación del programa de inversión forestal en México," under contract with P.I.M.B.S. Tumben Kuxtal, A.C.

Literature Cited

Calderón, R., J. R. Cedeño-Vázquez, and C. Pozo. 2003. Geographic Distribution. New distributional records for amphibians and reptiles from Campeche, Mexico. Herpetological Review 34: 269–272.

Ejido X-Can. 2017. Ordenamiento Territorial Comunitario del Ejido X-Can, Chemax, Yucatán, México. P.I.M.V.S. Tumben Kuxtal, A.C./PROENLACES, A.C./Fondo Mexicano para la Conservación de la Naturaleza/Comisión Nacional Forestal. 314 pp.

González-Sánchez, V. H., J. D. Johnson, E. García-Padilla, V. Mata-Silva, D. L. DeSantis, and L. D. Wilson. 2017. The herpetofauna of the Mexican Yucatan Peninsula: composition, distribution, and conservation. Mesoamerican Herpetology 4: 264–380.

Köhler, G. 2008. Reptiles of Central America. 2nd ed. Herpeton, Offenbach, Germany.

Lee J. C. 1996. The Amphibians and Reptiles of the Yucatan Peninsula. Comstock Publishing Associates, Cornell University Press, Ithaca, New York, United States.

McCranie, J. R., J. H. Townsend, and L. D. Wilson. 2004. *Corytophanes hernandesii*. Catalogue of American Reptiles and Amphibians 790.1–790.6.

Ramos-Galdamez, J., L. Gualberto-Zuñiga and M. Espinal. 2016. Distribution Notes. A new locality for *Corytophanes hernandesii* (Wiegmann, 1831), (Squamata: Corytophanidae) in western Honduras, with comments on its distribution. Mesoamerican Herpetology 3: 1,041–1,044.

Townsend, J. H., J. R. McCranie, and L. D. Wilson. 2004. *Corytophanes*. Catalogue of American Amphibians and Reptiles 788: 1–4.

Vieira, G. H., G. R. Colli, and S. N. Báo. 2005. Phylogenetic relationships of corytophanid lizards (Iguania, Squamata, Reptilia) based on partitioned and total evidence analyses of sperm morphology, gross morphology, and DNA data. Zoologica Scripta 34: 605–625.

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Family Eublepharidae

***Coleonyx fasciatus* (Boulenger, 1885).** MEXICO: SINALOA: Municipio de San Ignacio, Guillermo Prieto (23.6659°N, 106.7213°W; WGS 84), elev. 96 m; 23 September 2017; Rafael A. Lara-Resendiz. A photograph of this individual is deposited in the Colección Nacional de Anfibios y Reptiles at the Universidad Nacional Autónoma de México (Photo Voucher UNAM; IBH-RF 448). The gecko (Fig. 1A) was found under a log at 1025 h, in tropical deciduous forest (Fig 1B). This voucher represents a new municipality record, with the closest known locality ca. 49 airline km NNW of Mazatlán and ca. 101 km WSW of the type locality (Ventanas [=Villa Corona], Durango) (Kluge, 1975; Grismer, 1990).

This new record was discovered in Área de Protección de Flora y Fauna Meseta de Cacaxtla, where *C. fasciatus* is found sympatrically with such tropical reptiles as *Kinosternon integrum*, *Rhinoclemmys pulcherrima*, *Ctenosaura pectinata*, *Heloderma horridum*, *Iguana iguana*, *Boa sigma*, and *Crotalus basiliscus*. In this area of tropical deciduous forest (Fig 1B), the principal woody perennial plants are *Bursera* spp., *Lysiloma divaricatum*, *Heamatoxylum brasiletto*, *Tabebuia* spp. (Robichaux and Yetman, 2000); other species include the columnar cactus *Pachycereus pecten-aboriginum*, the trees *Pereskiopsis blakeana* and *Jatropha* spp., the larger shrub *Croton septemnervius*, and the understory species *Ipomoea bracteata* and *Bromelia pinguin*, which occur in aggregated patches.

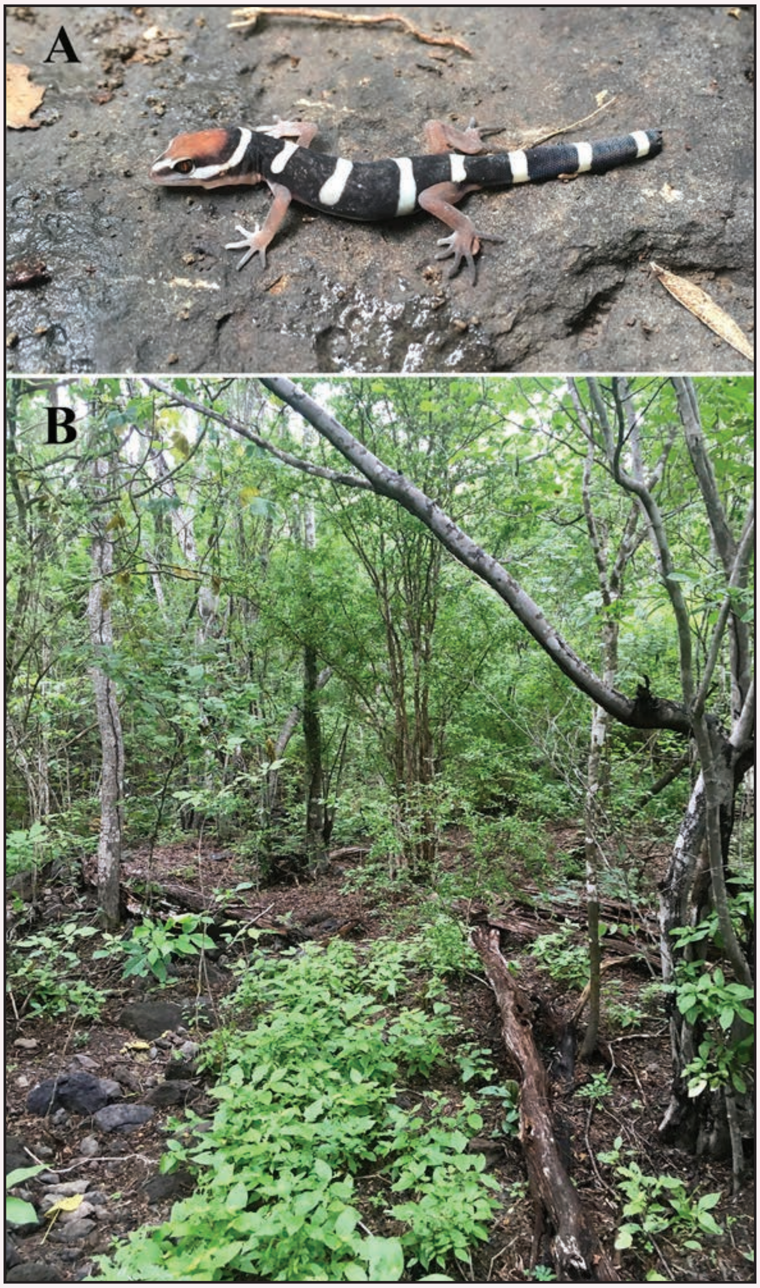

Fig 1. (A) A *Coleonyx fasciatus* (Photo Voucher UNAM; IBH-RF 448) from Municipio de San Ignacio, Guillermo Prieto, Sinaloa, Mexico; and (B) the habitat, characterized by tropical deciduous forest, in which it was found.

Acknowledgments.—We thank Area de Protección de Flora y Fauna Meseta de Cacaxtla (CONANP) and Santuario Playa El Verde Camacho for the accommodation and facilities granted during our stay, and Adrián Figueroa-Quesada, Agustín Ledesma-Morales, and Alfonso Martínez-Sotelo from Ejido Guillermo Prieto for field assistance. Finally, we thank Programa de Conservación para el Desarrollo Sostenible (CONANP/PROCODES/6689-6684/2017).

Literature Cited

Grismer, L. L. 1990. *Coleonyx fasciatus* (Boulenger). Black-banded Gecko. Catalogue of American Amphibians and Reptiles 463.1–2.

Kluge, A. G. 1975. Phylogenetic relationships and evolutionary trends in the Eublepharine lizard genus *Coleonyx*. Copeia 1975: 24–35.

Robichaux, R. H., and D. Yetman. 2000. The Tropical Deciduous Forest of Alamos: Biodiversity of a Threatened Ecosystem in Mexico. University of Arizona Press, Tucson, Arizona, United States.

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Family Gekkonidae

Hemidactylus frenatus **Duméril & Bibron, 1836.** MEXICO: BAJA CALIFORNIA SUR: Municipio de Comondú, La Purísima (26.189637°N, -112.073377°W; WGS 84); elev. 235 m; 8 September 2017. A hatchling *Hemidactylus frenatus* was found and photographed on a house wall at 1750 h. A photo of the gecko (Fig. 1) is deposited in the national collection of amphibians and reptiles of the Universidad Nacional Autónoma de México (Photo Voucher UNAM; IBH-RF 447). This voucher represents a range extension of ca. 76 km to the WNW (airline distance) from nearest published localities in Loreto, Baja California Sur (Grismer, 2002), ca. 78 km SSW of the online record (Naturalista: 5093592) from Mulegé provided by CONABIO (2016a), ca. 107 km SSE of the online record (Naturalista: 3645396) from Ciudad Insurgentes provided by CONABIO (2016b), and 133 km from Ciudad Constitución (Luja et al., 2010); see Fig. 2.

Fig. 1. A hatchling *Hemidactylus frenatus* (Photo Voucher UNAM; IBH-RF 447) from La Purísima, Municipio de Comondú, Baja California Sur, Mexico. © Rafael A. Lara-Resendiz

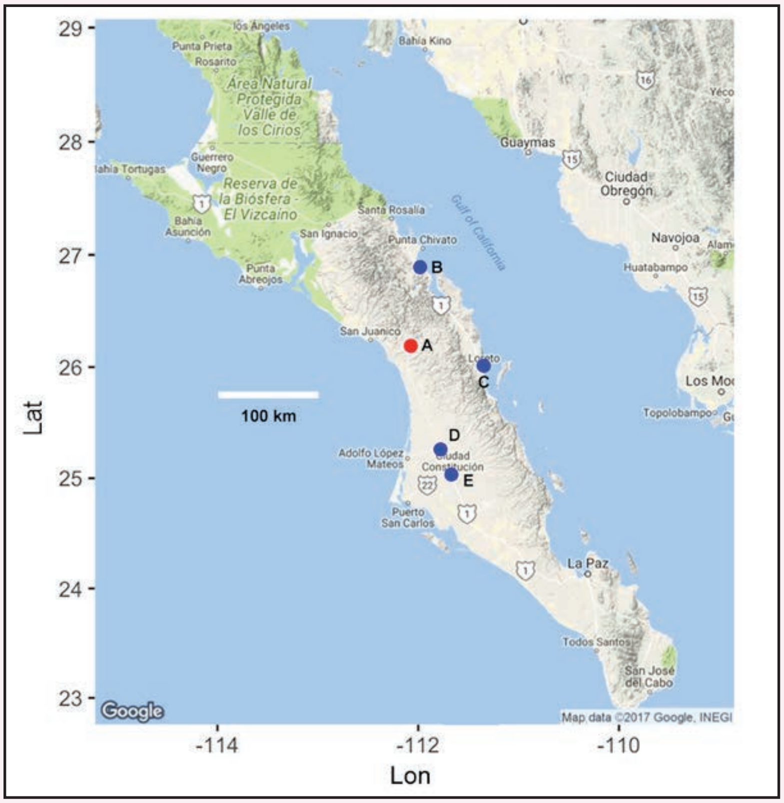

Fig 2. Closest occurrence records (blue) for *Hemidactylus frenatus* from our new record (see Fig. 1; red, A): (B) Mulegé (Naturalista: 5093592); (C) Loreto (Grismer, 2002); (D) Ciudad Insurgentes (Naturalista: 3645396); and (E) Ciudad Constitución (Luja et al., 2010).
Map by Rafael A. Lara-Resendiz.

Acknowledgments.—Our fieldtrip was supported by CONACyT (1319), and the collecting permit (SGPA/DGVS/08184/16) was issued by Dirección General de Vida Silvestre of México to Patricia Galina-Tessaro. We thank Jorge H. Valdez-Villavicencio for verifying the identification of the gecko, and Abelino Cota for field assistance.

Literature Cited

CONABIO, 2016a. Naturalista. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad, México, D.F., Mexico. (www.naturalista.mx/observations/5093592; accessed 16 September 2017).

CONABIO, 2016b. Naturalista. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad, México, D.F., Mexico. (www.naturalista.mx/observations/3645396; accessed 16 September 2017).

Grismer, L. L. 2002. Amphibians and Reptiles of Baja California: Including its Pacific Islands and the Islands in the Sea of Cortés. University of California Press, Berkeley, California, United States.

Luja, V. H., J.B. Granados, and R. Rodríguez-Estrella. 2010. Geographic Distribution, *Hemidactylus frenatus* (Common House Gecko). Mexico: Baja California Sur. Herpetological Review 41: 107.

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First records of *Hemidactylus garnotii* Duméril & Bibron 1836 (Squamata: Gekkonidae) in Guatemala

Köhler (2008) reported five species of house geckos (genus *Hemidactylus*) that have been introduced into several localities in Central America. These geckos usually are associated with human habitation and include the following species: *H. brookii*, *H. frenatus*, *H. garnotii*, *H. mabouia*, and *H. turcicus*. Duméril & Bibron (1836) described *H. garnotii* from Tahiti, French Polynesia. More recently, Savage (2002) noted the distribution of this species as Southeast Asia, the East Indies to the Philippines, most islands in the Tropical Pacific Ocean to Hawaii, and that it was introduced into St. Helena, the Bahamas, and southern Florida (Fig. 1). Initially, *H. garnotii* was recorded in Central America in 1992, from a suburb of San José, in the province of San José, Costa Rica, but eventually this gecko was recorded in other parts of the country, at elevations from sea level to 1,160 m (Savage, 2002; Köhler, 2008). Presumably, *H. garnotii* is a successful colonizer because it reproduces through parthenogenesis, which expedites reproduction and leads to an expansion of its range (Wilson and Porras, 1983; Savage, 2002).

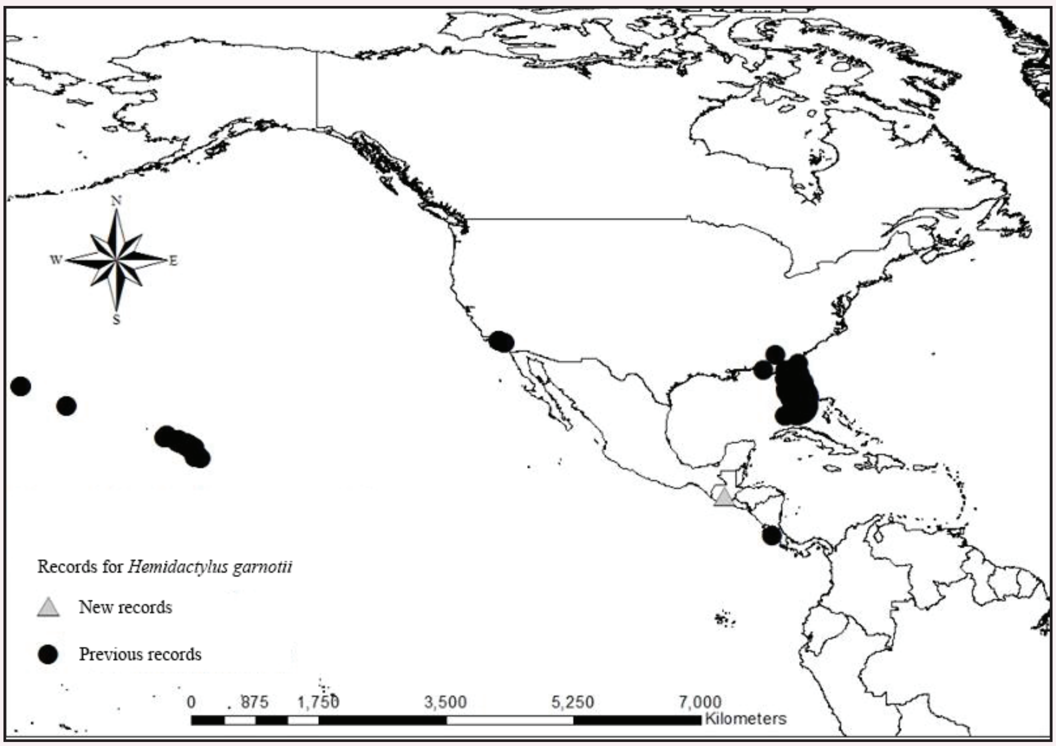

Fig. 1. Localities in the Western Hemisphere and Pacific Ocean where *Hemidactylus garnotii* has been recorded. New records = gray triangle; and previous records = black circles.

Herein we report the collection of two specimens of *H. garnotii*. The first (USAC 4605) was found inside a house at 1738 h on 11 August 2016, at Zona 12, Ciudad de Guatemala Departamento de Guatemala, Guatemala (14°34.963'N, -090°33.155"W; WGS 84) elev. 1,482 m; María José Chang A. The second (USAC 4606) also was found inside a house, on 20 May 2017 at 1243 h, at Zona 16, Ciudad de Guatemala City, Departamento de Guatemala, Guatemala (14°36'18"N, -90°28'16"W; WGS 84), elev. 1,596 m; Vivian Susana Ochoa A. These specimens represent the first records for Guatemala, and the elevation 1,596 m for (USAC 4606) represents a new elevational record for *H. garnotii* in Central America (see Köhler 2008: 76), and perhaps for other parts of its distribution. The specimens were collected under CONAP permit A-2950, issued to Sergio G. Pérez Consuegra/Escuela de Biología Universidad de San Carlos de Guatemala, and deposited in the Museo de Historia Natural de la Universidad de San Carlos de Guatemala, Ciudad de Guatemala, Guatemala.

The description of the specimens agrees with the diagnostic characters provided by Duméril & Bribon (1836), Giri and Bauer (2008), and Köhler (2008). These characters can be used to separate *H. garnotii* from other invasive geckos, such as *H. frenatus* and *H. turcicus* (Fig. 2; also see Köhler, 2008: 76).

We are uncertain if the introduction of this species in Guatemala resulted from shipping commerce, the exotic pet trade, or some other reason. Invasive species are known to alter community dynamics, the function of ecosystems, and the distribution of resources, and also can cause extinctions that affect global diversity (Vitousek et al., 1996; Mooney and Cleland, 2001; Collins et al., 2002).

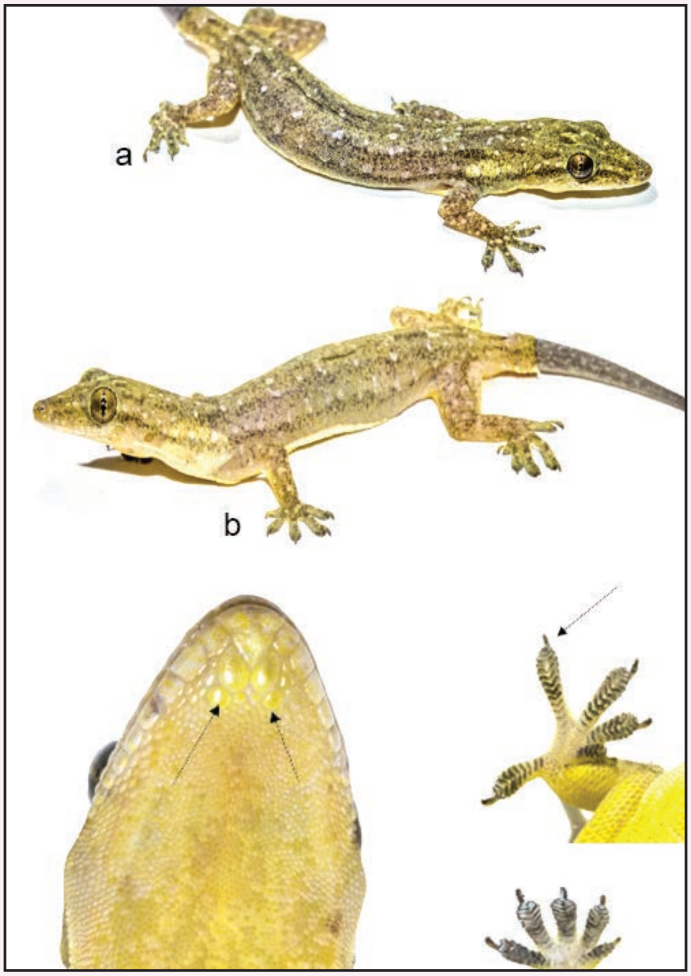

Fig. 2. An individual of *Hemydactylus garnotii* found in Ciudad de Guatemala, Guatemala. (a, b) Dorsal and lateral views of the specimen; (c, d) diagnostic characters for the genus *Hemidactylus*; and (e) bilateral diagnostic character for *H. garnotii*.
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Acknowledgments.—We thank Victor Acosta Chaves for providing information about *Hemidactylus garnotii* in Costa Rica, the Museo de Historia Natural de la Universidad de San Carlos de Guatemala for the support in obtaining the collecting permit, César Estuardo Fuentes Montejo for providing the distribution map, and Varad Giri and Jonathan A. Campbell for verifying the identification of the specimens.

Literature Cited

Collins, M. D., D. P. Vázquez, D. P., and N. J. Sanders. 2002: Species-area curves, homogenization and the loss of global diversity. Evolutionary Ecology Research 4: 457–464.

Duméril, A. M. C., and G. Bibron. 1836. Erpetologie Générale ou Histoire Naturelle Complète des Reptiles. Volume 3. Librairir. Encyclopédique de Roret, Paris, France.

Giri, V., and A. Bauer. 2008. A new ground-dwelling *Hemidactylus* (Squamat: Gekkonidae) from Maharashtra, with a key to the *Hemidactylus* of India. Zootaxa 1,700: 21–34.

Köhler, G. 2008. Reptiles of Central America. 2nd ed. Herpeton, Offenbach, Germany.

Mooney, H. A., and E. E. Cleland. 2001. The evolutionary impact of invasive species. Proceedings of the National Academy of Science 98: 5,446–5,451.

Savage, J.M. 2002. The Amphibians and Reptiles of Costa Rica: A Herpetofauna between Two Continents, between Two Seas. The University of Chicago Press, Chicago, Illinois, United States.

Vitousek, P., C. D'Antonio, C. M., L. Loope, and R. Westbrooks, R. 1996. Biological invasions as global environmental change. American Scientist 84: 468–478.

Wilson, L. D., and L. W. Porras. 1983. The Ecological Impact of Man on the South Florida Herpetofauna. University of Kansas Museum of Natural History, Special Publication No. 9, Lawrence, Kansas, United States.

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Family Scincidae

Range extension of *Mesoscincus managuae* (Dunn, 1933) in Guatemala

The skink genus *Mesoscincus* contains three species that can be differentiated from other skinks in the Americas by their relatively large body size, the presence of three presuboculars, and a median row of dorsal scales that are greatly enlarged posteriorly with respect to the adjacent scales (Taylor, 1935; Griffith et al., 2000). Despite their large size, species of *Mesoscincus* seldom are encountered during fieldwork, resulting in a poor understanding of their distribution and natural history (Griffith et al., 2000; Köhler, 2008).

The three species of *Mesoscincus* are exclusive to Mesoamerica: *M. altamirani* is known from the Balsas Basin and surrounding mountains in the Mexican states of Michoacán and Guerrero (Mendoza-Hernández et al., 2011; Jiménez-Arcos et al., 2016); *M. schwartzei* is known from the Yucatán Peninsula and adjacent Atlantic lowlands in the Mexican states of Campeche, Chiapas, Quinatana Roo, Tabasco, and Yucatán, as well as from northern Belize and Petén in Guatemala (Percino-Daniel et al., 2012); *M. managuae* was only known from the tropical dry forests in the Pacific versant of Honduras, Nicaragua, and northern Costa Rica as recently as 1990 (Reeder, 1990), but recent records have demonstrated its presence in El Salvador (Greenbaum et al., 2002) and the valley of the Motagua River in Guatemala (Acevedo, 2006; Ariano-Sánchez et al., 2010). Currently, however, VertNet (2017) does not list any specimens from Guatemala.

On 6 June 2016, one of us (PS) observed an adult individual of *M. managuae* on the outskirts of La Estancia de La Virgen, Municipio de San Cristóbal Acasaguastlán, Departamento de El Progreso, Guatemala (14.9382°N, 89.8853°W; WGS 84; elev. 276 m). The individual was found under a rock in heavily degraded subtropical thorn scrub forest. Specimen collection has been recognized as a best-practice when reporting novel distributional records in Mesoamerica (Clause et al., 2016), but the absence of relevant permits when the individual of *M. managuae* was observed prevented collection. Thus, we deposited a series of four photographs at the photographic collection of the Museo de Zoología, Facultad de Estudios Superiores Zaragoza, Universidad Nacional Autónoma de México (MZFZ IMG 18–21), and uploaded them to the iNaturalist online platform (observations 8366503–8366506). Distinguishing *Mesoscincus* from other genera and discerning between the three species of the genus is relatively straightforward, and the images allowed us to record the diagnostic characters of *M. managuae*: the presence of three presuboculars, an enlarged median row of dorsal scales, a longitudinal scale count between the parietals and the vent approximating 70, short limbs that are broadly separated from each other when adpressed against the body, and a light brown dorsum bearing eight narrow dotted longitudinal dark lines (Fig. 1).

A review of the pertinent literature (i.e., Reeder, 1990; Greenbaum et al., 2002; Savage, 2002; Leenders and Watkins-Colwell, 2004; Acevedo, 2006; Köhler, 2008; Sunyer Mac Lennan, 2009; Ariano-Sánchez et al., 2010; Sánchez Ramos and Orozco, 2011; Valdés Orellana et al., 2011; McCranie et al., 2014) and VertNet (2017) revealed that our voucher represents the first record for the Departamento de El Progreso, the third record for Guatemala, and the northernmost record for the species (Fig. 2). The closest records are those from Rosario and El Arenal, in the Municipio de Cabañas, Departamento de Zacapa, Guatemala, located ca. 11 km and 14 km SE of the new record (in straight line), respectively (Acevedo, 2006; Ariano-Sánchez et al., 2010).

Fig. 1. An individual of *Mesoscincus managuae* (MZFZ IMG 18) from the outskirts of La Estancia de La Virgen, Municipio de San Cristóbal Acasaguastlán, Departamento de El Progreso, Guatemala. © Pavel Šmek

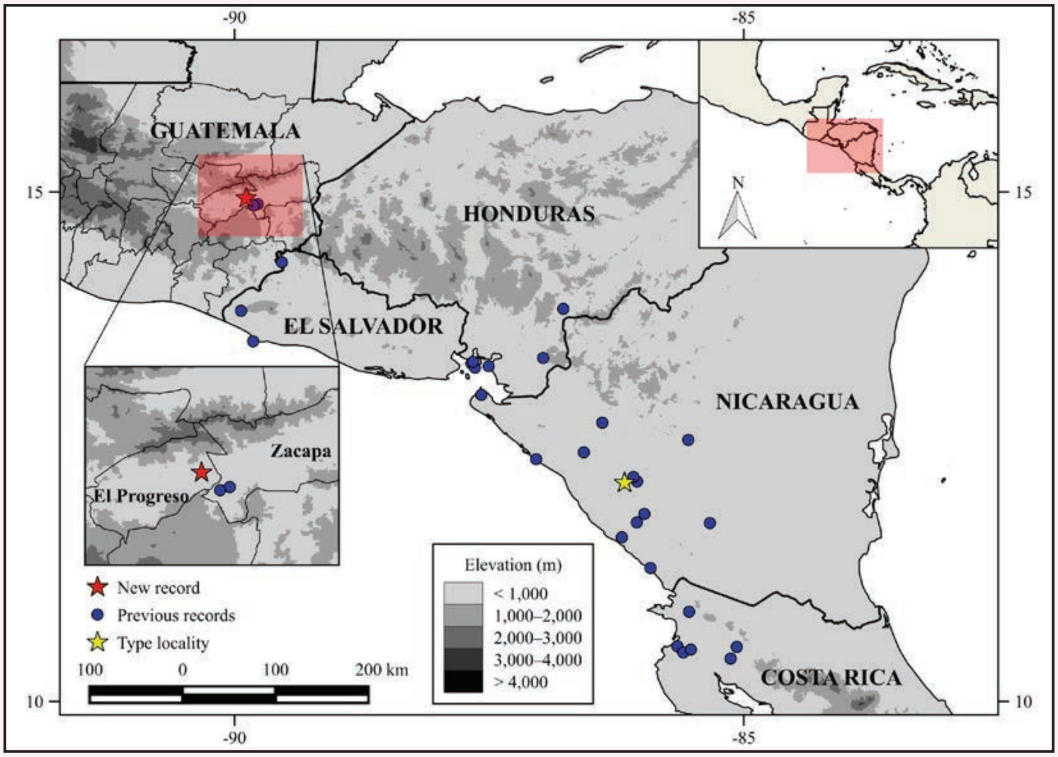

Fig. 2. Known localities for *Mesoscincus managuae*. Bold lines represent country limits and narrow lines Guatemalan departmental limits. The inset on the top-right shows a broad overview of the region.

Acknowledgments.—We thank Manuel Acevedo, Jonathan A. Campbell, and Danny A. Mazariegos Fuentes for sharing their expertise on the Guatemalan herpetofauna; Jonathan A. Campbell and Uri O. García Vázquez for verifying the identity of the specimen; Uri O. García Vázquez for cataloguing photographs in the MZFZ IMG; and Louis W. Porras and Javier Sunyer for reviewing a draft of this note.

Literature Cited

Acevedo, M. 2006. Anfibios y reptiles de Guatemala: una breve síntesis con bibliografía. Pp.487–524 *In* E. B. Cano (Ed.), Biodiversidad de Guatemala. Volumen I. Universidad del Valle de Guatemala, Guatemala, Guatemala.

Ariano-Sánchez, D., A. Urbina, and G. Salazar. 2010. Geographic Distribution. *Mesoscincus managuae* (Managua Skink). Herpetological Review 41: 107.

Clause, A. G., C. J. Pavón-Vázquez, P. A. Scott, C. M. Murphy, E. W. Schaad, and L. N. Gray. 2016. Identification uncertainty and proposed best-practices for documenting herpetofaunal geographic distributions, with applied examples from southern Mexico. Mesoamerican Herpetology 3: 977–1,000.

Greenbaum, E., N. Herrera, R. Ibarra Portillo, O. Komar, and R. Rivera. 2002. Geographic Distribution. *Mesoscincus managuae* (Managua Skink). Herpetological Review 33: 322.

Griffith, H., A. Ngo, and R. W. Murphy. 2000. A cladistic evaluation of the cosmopolitan genus *Eumeces* Wiegmann (Reptilia, Squamata, Scincidae). Russian Journal of Herpetology 7: 1–16.

Jiménez-Arcos, V. H., R. A. Calzada-Arciniega, C. Toscano-Flores, R. Gómez Trejo-Pérez, and A. H. Díaz de la Vega-Pérez. 2016. Distribution Notes. *Mesoscincus altamirani* (Dugès, 1891). Mesoamerican Herpetology 3: 510–511.

Köhler, G. 2008. Reptiles of Central America. 2nd ed. Herpeton, Offenbach, Germany.

Leenders, T. A. A. M., and G. J. Watkins-Colwell. 2004. Notes on a collection of amphibians and reptiles from El Salvador. Postilla 231: 1–31.

McCranie, J. R., R. D. Centeno, J. Ramos, L. Valdés Orellana, J. E. Mérida, and G. A. Cruz. 2014. Eight new records of lizards and snakes (Reptilia: Squamata) from subhumid areas in El Paraíso, Honduras, and morphometry of the poorly-known pitviper *Agkistrodon howardgloydi*. Cuadernos de Investigación UNED 6: 99–104.

Mendoza-Hernández, A. A., E. Pérez-Ramos, I. Solano-Zavaleta, and A. J. Roth-Monzón. 2011. Extensión de la distribución geográfica de *Mesoscincus altamirani* (Squamata: Sauria: Scincidae) en el estado de Guerrero, México. Revista Mexicana de Biodiversidad 82: 1,049–1,052.

Percino-Daniel, R., S. Bárcenas Arriaga, and A. Sarabia Rangel. 2012. Ampliación de la distribución de *Mesoscincus schwartzei* (Squamata: Scincidae) en el Estado de Chiapas, México. Acta Zoológica Mexicana 28: 644–648.

Reeder, T. W. 1990. *Eumeces managuae*. Catalogue of American Amphibians and Reptiles 467.1–467.2.

Sánchez Ramos, C. A., and J. A. Orozco. 2011. Diversidad y Distribución Herpetológica en la Ladera Noroeste de la Reserva Natural Complejo Volcánico Momotombo-Momotombito. Unpublished Licenciatura thesis, Universidad Nacional Autonoma De Nicaragua UNAN-León, León, León, Nicaragua.

Savage, J. M. 2002. The Amphibians and Reptiles of Costa Rica: a Herpetofauna between Two Continents, between Two Seas. University of Chicago Press, Chicago, United States.

Sunyer Mac Lennan, J. 2009. Taxonomy, Zoogeography, and Conservation of the Herpetofauna of Nicaragua. Unpublished Ph.D. dissertation, Goethe-Universität Frankfurt am Main, Frankfurt, Hesse, Germany.

Taylor, E. H. 1935. A taxonomic study of the cosmopolitan scincoid lizards of the genus *Eumeces* with an account of the distribution and relationships of its species. Kansas University Sciences Bulletin 23: 1–643.

Valdés Orellana, L., J. R. McCranie, and A. Gutsche. 2011. Geographic Distribution. *Mesoscincus managuae* (NCN). Herpetological Review 42: 242.

VertNet. 2017. (www.vertnet.org; accessed 3 October 2017).

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***Plestiodon tetragrammus* Baird, 1859.** MEXICO: HIDALGO: Municipio de Pacula, Adjuntas (20.930417°N, -99.268213°W; WGS 84) elev. 1,267; 2 September 2017; Miguel Ángel Flores-Hernández. The lizard was not was collected. A photo voucher of this lizard (CH-CIB 102) is deposited in the photographic collection of the Herpetological Collection of the Centro de Investigaciones Biológicas, Universidad Autónoma del Estado de Hidalgo. This voucher represents a new municipality record and the second record from the state, with the closest known locality ca. 30.9 km to the SW (airline distance) at Sabínas, Municipio de Zimapán, Hidalgo (Lemos-Espinal and Dixon, 2016). *Plestiodon tetragrammus* also had not been reported from Parque Nacional Los Mármoles (Cruz-Elizalde et al., 2015), so this species now is known to occur in this natural area. Our record also reconfirms the presence of this species in the state of Hidalgo, as Manríquez-Morán et al. (2017) did not consider this species in a recent list of the non-avian sauropsids of the state.

Fig 1. A *Plestiodon tetragrammus* (CH-CIB 102) from Adjuntas, Municipio de Pacula, Hidalgo, Mexico.

© Miguel Ángel Flores-Hernández

Acknowledgments.—We thank the people of Adjuntas, in the municipiality of Pacula, and especially Mariano Ramírez and Mariano Ramírez, Jr., and their families, for providing field assistance and lodging, and Irene Goyenechea for allowing us to deposit the photograph of the lizard in the photographic collection of the Herpetological Collection of the Centro de Investigaciones Biológicas. We also give a special thanks to UAEH's Biology undergraduate students in the course "herpetología," semester 2017-2, for support with our fieldwork.

Literature Cited

Cruz-Elizalde, R., A. Ramírez-Bautista, L. D. Wilson., and U. Hernández-Salinas. 2015. Effctiveness of protected areas in herpetofauna conservation in Hidalgo, Mexico. Herpetological Journal 25: 41–48.

Lemos-Espinal, J. A., and J. R. Dixon. 2016. Anfibios y Reptiles de Hidalgo, México / Amphibians and Reptiles of Hidalgo, Mexico. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad, Ciudad de México, Mexico.

Manríquez-Morán, N. L., J. M. Castillo-Cerón, I. Goyenechea Mayer-Goyenechea, R. Cruz-Elizalde, U. Hernández-Salinas, D. Lara-Tufiño, L. M. Saldaña-Badillo, C. Berriozabal-Islas, and A. Ramírez-Bautista. 2017. Riqueza y diversidad de saurópsidos (no aves) del estado de Hidalgo. Pp. 505–528 *In* Ramírez-Bautista, A., A. Sánchez-González, G. Sánchez-Rojas, and C. Cuevas-Cardona (Eds.), Biodiversidad del Estado de Hidalgo. Tomo II. Universidad Autónoma del Estado de Hidalgo/Consejo Nacional de Ciencia y Tecnología, Pachuca de Soto, Hidalgo, Mexico.

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Reptilia: Squamata (Snakes)

Family Dipsadidae

***Adelphicos quadrivirgatum* Jan, 1862.** MEXICO: VERACRUZ: Municipio de Atoyac, Atoyac (18°55'13.15"N; 96°46'12.79" W; WGS 84; elev. 489 m). On 17 June 2017 at 1127 h, we found an adult of *Adelphicos quiadrivirgatum* (Fig.1) in a field planted with palm (*Chamaedorea* sp.) and Mango (*Mangifera indica*) trees. The morphological characteristics of the individual correspond to those described by Heimes (2016). We did not collect the snake, but deposited a photo voucher in the University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC- 9164). This voucher represents a new municipality record. The previous reported localities for this species are in west-central Veracruz, as follows: Paso del Macho, KU (1 specimen); 1 mi S Santa Rosa (today known as Camerino Z. Mendoza), TCWC (1). This report represents a range extension of 6.38 km (airline) to the W of the closest previously reported locality at Paso del Macho, Veracruz (18°58' 0.00"N, 96°43'59.99" W; WGS 84. elev. 491 m) (VertNet, 2017). We consider this an uncommon species in the Altas Montañas region of west-central, Veracruz, as there is a difference of 61 years between the current record and the previous one from Santa Rosa (TCWC) in the year 1956.

Fig. 1. An adult *Adelphicos quadrivirgatum* (UTADC-9164) from Atoyac, Municipio de Atoyac, Veracruz, Mexico.

Acknowledgments.—We thank to Carl J. Franklin for cataloguing the digital photograph, Luis Canseco-Márquez and Louis Porras for providing comments on the note, and Keila Abigail Hernández Hernández and Eunice Ballona-Hernández for field assistance.

Literature Cited

Heimes, P. 2016. Herpetofauna Mexicana Vol. 1: Snakes of Mexico. Edition Chimaira, Frankfurt am Main, Germany.

VertNet. 2015. (www.vertnet.org/index.html; accessed 29 November 2017).

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Family Dipsadidae

***Diadophis punctatus* (Linnaeus, 1766).** MEXICO: HIDALGO: Municipio de Mineral del Chico, Ejido Carboneras (20.23222°N, -98.67844°W; WGS 84) elev. 2,166 m; 4 June 2017; Leonardo Fernández-Badillo. The snake was found under a rock along the border of agricultural land and oak forest, during a faunal diversity proyect for forest management. The individual was not collected. The snake was observed ca. 2.5 km NE of the boundary of Parque Nacional El Chico, an area where this snake has not been recorded (Ramírez-Bautista and Ramírez-Pérez, 2008; Ramírez-Pérez, 2008), so it likely occurs within this natural protected area. A photo voucher (CH-CIB 096) is deposited in the photographic collection of the Herpetological Collection of the Centro de Investigaciones Biológicas, Universidad Autónoma del Estado de Hidalgo. This voucher represents a new municipality record, with the closest known locality 19.35 km to the SW (airline distance) at Rancho Santa Elena, Municipio de Huasca de Ocampo (Fernández-Badillo et al., 2017; CH-CIB 680).

Fig 1. A *Diadophis punctatus* (CH-CIB 96), from Ejido Carboneras, Municipio de Mineral del Chico, Hidalgo, Mexico.

Acknowledgments.—We thank Comisión Nacional Forestal (CONAFOR) for funding project "Estudio Regional de la Diversidad de fauna silvestre de la UMAFOR 1303 Pachuca-Tulancingo, Hidalgo," PRONAFOR 2016, and also Asociación de Silvicultores de la Región Forestal Pachuca y Tulancingo, A.C. We also give a special thanks to the Ejido Carboneras, as well as to Irene Goyenechea for allowing us to deposit the voucher in the photographic collection of the Herpetological Collection of the Centro de Investigaciones Biológicas.

Literature Cited

Fernández-Badillo, L., N. Morales-Capellán, C. R. Olvera-Olvera, G. Montiel-Canales and I. Goyenechea. 2017. Guía de las Serpientes del Estado de Hidalgo. Universidad Autónoma del Estado de Hidalgo, Pachuca, Hidalgo, Mexico.

Ramírez-Bautista, A., and A. Ramírez-Pérez. 2008. ¿Sabes quién vive en el Parque Nacional el Chico? Anfibios y reptiles. Universidad Autónoma del Estado de Hidalgo, Secretaría de Educación Pública y Dirección del Parque Nacional El Chico, Pachuca, Hidalgo, Mexico.

Ramírez-Pérez, A. 2008. Herpetofauna del Parque Nacional El Chico y su zona de influencia, Hidalgo, México. Unpublished Licenciature thesis, Universidad Autónoma del Estado de Hidalgo, Pachuca, Hidalgo, Mexico.

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Family Dipsadidae

***Hypsiglena tanzeri* Dixon and Lieb, 1972.** MEXICO: HIDALGO: Municipio de Pacula, Adjuntas (20.932667°N, -99.271483°W; WGS84); elev. 1,250 m; 30 August 2017; Ángel Iván Hernández-González. The snake was found at 2155 h along the base of a rock wall located within tropical deciduous forest, and was not collected. A photo voucher of this individual (CH-CIB 103, Fig. 1) is deposited in the photographic collection of the Herpetological Collection of the Centro de Investigaciones Biológicas, Universidad Autónoma del Estado de Hidalgo. This voucher represents a new municipality record, and a new record for Parque Nacional Los Mármoles (Cruz-Elizalde et al., 2015). It also represents the third record for the state, with the other known localities in the municipalities of Tecozautla and Metztitlán (Morales-Capellán et al., 2016). The closest known locality to our record, however, is ca. 36.51 km to the NW (airline distance) in the municipality of Jalpan, Querétaro (Dixon and Lieb, 1972).

Fig 1. A *Hypsiglena tanzeri* (CH-CIB 103) from Adjuntas, Municipio de Pacula, Hidalgo, Mexico.
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Acknowledgments.—We thank the people of Adjuntas, in the municipality of Pacula, and especially Mariano Ramírez-Trejo and Mariano Ramírez-Ramírez, and their families, for providing field assistance and lodging, and Irene Goyenechea for allowing us to deposit the photo of the snake in the photographic collection of the Herpetological Collection of the Centro de Investigaciones Biológicas. We also give a special thanks to UAEH's Biology undergraduate the students of the course "herpetología," semester 2017-2, de la licenciatura en Biología, UAEH, for support with our fieldwork.

Literature Cited

Cruz-Elizalde, R., A. Ramírez-Bautista, L. D. Wilson., and U. Hernández-Salinas. 2015. Effctiveness of protected areas in herpetofauna condervation in Hidalgo, Mexico. Herpetological Journal 25: 41–48.

Dixon, J. R., and C. S. Lieb. 1972. A new night snake from Mexico (Serpentes: Colubridae). Los Angeles County Museum Contributions in Scince 222: 1–7.

Morales-Capellán, N., L. Fernández-Badillo, A. Lopez-Mejía, G. Sánchez-Martínez and I. Goyenechea. 2016. Miscellaneous Notes. Confirmation of the night snake *Hypsiglena tanzeri* in Hidalgo, Mexico, and a new record for Reserva de la Biósfera de la Barranca de Metztitlán. Mesoamerican Herpetology 3: 1,097–1,100.

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Family Dipsadidae

***Leptodeira splendida* Günther, 1895.** MEXICO: ZACATECAS: Municipio de Valparaiso, ca. 25 km (airline) W of Huejuquilla El Alto (22.641936°N, -104.139169°W; WGS 84); elev. 1,350 m; 21 March 2017; Jorge A. Bañuelos-Alamillo. The snake (sex = female; snout-vent length = 433 mm; tail length = 146 mm; ventrals = 169; subcaudals = 69; and dorsal body blotches = 32) was found dead on the road in dry forest and xerophytic scrub ecotone. A photo voucher is deposited at the San Diego Natural History Museum (SDSNH_HerpPC_05353). The specimen was deposited in the Vertebrate Collection of Universidad Autónoma de Aguascalientes (CZUAA-REP-651). This individual represents a new municipality record, extending the distribution ca. 40 km (airline) to the NW from the closest known locality at Mezquitic, Jalisco (ENCB-IPN-12252; López-Vidal et al., 2017); it also represents the second known specimen from the state of Zacatecas (Ahumada-Carrillo et al., 2011).

Fig. 1. A female *Leptodeira splendida* found dead on the road in Municipio de Valparaiso, Zacatecas, Mexico (SDSNH_HerpPC_05353).

Acknowledgments.—We thank Bradford Hollingsworth for providing the photo voucher number. The specimen was collected under permit SGPA/DGVS/030709/16, issued by Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT) to Gustavo E. Quintero-Díaz.

Literature Cited

Ahumada-Carrillo, I. T., O. Vázquez-Huizar, J. Vázquez-Díaz, and U. O. García-Vázquez. 2011. Noteworthy Records of Amphibians and Reptiles from Zacatecas, Mexico. Herpetological Review 42: 397–398.

López-Vidal, J. C, and P. Ramos-Rivera. 2017. Computarización de las colecciones de vertebrados terrestres de la Escuela Nacional de Ciencias Biológicas, IPN-Fases 2 y 3. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad. Occurrence dataset https//doi.org/10.15468/wh690q accessed via GBIF.org. (https://www.gbif.org/occurrence/1420423817; accessed 23 March 2017).

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Family Dipsadidae

***Urotheca fulviceps* (Cope, 1886).** PANAMA: VERAGUAS: Parque Nacional Santa Fe, Distrito de Santa Fe, Corregimiento El Pantano (8.570000°N, 81.090000°W; WGS 84); elev. 1,100 m; 20 October 2009; Ángel Sosa-Bartuano, David Natera, and Edgar Toribio. Four photographs of this snake are deposited in the University of Texas at Arlington Collection of Vertebrates Digital Collection (photo vouchers UTADC 8577–8580; Fig. 1A). The individual was found active on the ground at 1214 h, in cloud forest (Fig. 1B). This voucher represents a new record for the national park and for the province of Veraguas, with the closest reported locality ca. 56 km (airline distance) to the NE at El Copé, Provincia de Coclé (Ray and Santana, 2014), and ca. 267 km (airline distance) to the SW in the Península de Osa, Provincia de Puntarenas, Costa Rica (Köhler, 2008; VertNet, 2017).

Savage (2002) indicated the distribution of this species as disjunct in the lowlands of southwestern Costa Rica, central and eastern Panama, northern Colombia, western Ecuador, and northwestern Venezuela, but also noted that Myers (1974) questioned some high elevation records from Colombia. Myers (1974) mentioned that some records from central Colombia required confirmation, because some elevations, including one of 2,003 m listed in Medem (1965), were suspiciously high. It remains unclear, however, whether this voucher from Panama represents the highest known elevation for this species.

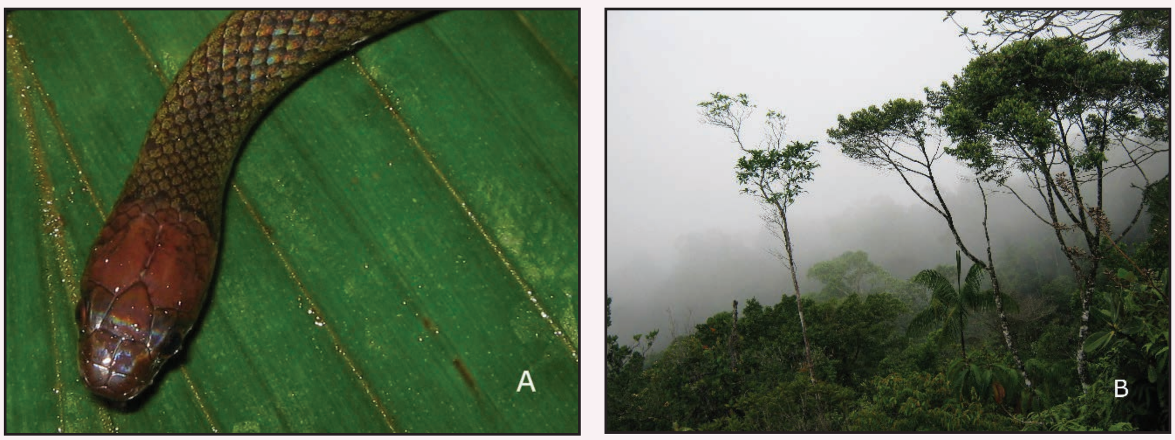

Fig. 1. (A) A *Urotheca fulviceps* (UTADC-8577) from Parque Nacional Santa Fe, Distrito de Santa Fe, Provincia de Veraguas, Panama; and (B) the cloud forest at Parque Nacional Santa Fe (elev. 1,100 m) where the *U. fulviceps* was observed.

Acknowledgments.—I thank Edgar Toribio, Eric Donoso, Yanina Mendoza, Rafael Samudio, Jr., and Julieta Carrión de Samudio for logistical support for the fieldwork, Louis W. Porras for commenting on the note, and Carl J. Franklin for providing the photo voucher numbers.

Literature Cited

Köhler, G. 2008. Reptiles of Central America. 2nd ed. Herpeton, Offenbach, Germany.

Medem, F. 1965. Bibliografía comentada de reptiles Colombianos. Revista de la Academia Colombiana de Ciencias Exactas, Físicas y Naturales 12: 299–346.

Myers, C. W. 1974. The systematics of *Rhadinaea* (Colubridae), a genus of New World snakes. Bulletin of the American Museum of Natural History 153: 1–262.

Ray, J., and P., Santana. 2014. Geographic Distribution. *Urotheca fulviceps* (Red-headed Glasstail). Herpetological Review 45: 97.

Savage, J. M. 2002. The Amphibians and Reptiles of Costa Rica: A Herpetofauna between Two Continents, between Two Seas. The University of Chicago Press, Chicago, Illinois, United States.

VertNet. 2017. (www.vertnet.org; accessed 17 December 2017).

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Family Natricidae

Thamnophis pulchrilatus **(Cope, 1885).** MEXICO: HIDALGO: Municipio de Tulancingo de Bravo, Ejido Santa María Asunción (20.12461°N, -98.302202°W; WGS 84); elev. 2,202 m; 5 June 2017; José Luis Jiménez-Villegas. The snake, a young individual, was found at 1620 h under a rock along the edge of a field crop adjacent to oak forest, during a faunal diversity project for the management of forests. The snake was not collected. A photo voucher (CH-CIB 100; Fig. 1) is deposited in the photographic collection of the herpetological collection of the Centro de Investigaciones Biológicas, Universidad Autónoma del Estado de Hidalgo. This voucher represents a new municipality record, with the closest reported locality 13.67 km to the SE (airline distance) in the vicinity of Cebaditas, Municipio de Cuautepec de Hinojosa, Hidalgo (Cruz-Elizlade, 2010; Ramírez-Bautista et al. 2010; 2014; Fernández-Badillo et al., 2016; CH-CIB 59).

Fig 1. A *Thamnophis pulchrilatus* (CH-CIB 100) from Ejido Santa María Asunción, Municipio de Tulancingo de Bravo, Hidalgo, Mexico.
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Acknowledgments.—We thank to Comisión Nacional Forestal (CONAFOR) for funding the project "Estudio Regional de la Diversidad de fauna silvestre de la UMAFOR 1303 Pachuca-Tulancingo, Hidalgo," PRONAFOR 2016, and Asociación de Silvicultores de la Región Forestal Pachuca y Tulancingo, A.C. We also give a special thanks to the people at Ejido Santa María Asunción, as well as to Irene Goyenechea for allowing us to deposit the voucher in the photographic collection of the Herpetological Collection of the Centro de Investigaciones Biológicas.

Literature Cited

Cruz-Elizalde, R. 2010. Análisis herpetofaunístico por tipos de vegetación en los municipios de Acaxochitlán y Cuautpec de Hinojosa, Hidalgo. Unpublished Licenciatura thesis, Universidad Autónoma del Estado de Hidalgo, Pachuca, Hidalgo, Mexico.

Fernández-Badillo, L., C.R. Olvera-Olvera, S. Y. Valdez-Renteria, F. Torres-Angeles, and I. Goyenechea. 2016. Distribution Notes. New records of *Thamnophis pulchrilatus* (Squamata: Natricidae) from the state of Hidalgo, Mexico. Mesoamerican Herpetology 3: 519–523.

Ramírez-Bautista, A., U. Hernández-Salinas, F. Mendoza-Quijano, R. Cruz-Elizalde, B. P. Stephenson, V. D. Vite-Silva, and A. Leyte-Manrique. 2010. Lista Anotada de los Anfibios y Reptiles del Estado de Hidalgo. Universidad Autónoma del Estado de Hidalgo, Pachuca, Hidalgo, and Comisión Nacional para el Conocimiento y Uso de la Biodiversidad, México, D.F, Mexico.

Ramírez-Bautista, A., U. Hernández-Salinas, R. Cruz-Elizalde, C. Berriozabal-Islas, D. Lara-Tufiño, I. Goyenechea Mayer-Goyenechea, and J. Castillo-Cerón. 2014. Los Anfibios y Reptiles de Hidalgo, México: Diversidad, Biogeografía y Conservación. Sociedad Herpetológica Mexicana, A.C., Mexico.

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Family Viperidae

***Cerrophidion wilsoni* Jadin, Townsend, Castoe, and Campbell, 2012.** NICARAGUA: NUEVA SEGOVIA: Reserva Natural Cordillera de Dipilto-Jalapa, Cerro Mogotón, Finca Santa Teresa (13.736°N, 86.381°W; datum WGS 84); elev. 1,390 m; 5 June 2016; Alexander Antonio Acosta Antón and Johnathan Peter Hruska. A photo voucher of this individual is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8954; Fig. 1A). The snake was found coiled at 1530 h, in an area of disturbed Lower Montane Moist Forest (Holdridge, 1967; Savage, 2002) where the ground recently had collapsed after heavy rains. JINOTEGA: Reserva Natural Macizos de Peñas Blancas, comarca Peñas Blancas #1, Municipio de El Cuá, near Cascada Arcoiris (13.27818°N, 85.68709°W; datum WGS 84); elev. 1,607 m; 22 November 2016; Calef Jirón. A photo voucher of this individual is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8955; Fig. 1B). The viper was found basking near a small stream at 1000 h, in a steep area of Lower Montane Wet Forest (Holdridge, 1967; Savage, 2002) that contained large volcanic rocks.

Fig. 1. Individuals of *Cerrophidion wilsoni* from Nicaragua. (A) Cerro Mogotón, Departamento de Nueva Segovia (UTADC-8954); and (B) Reserva Natural Macizos de Peñas Blancas, Departamento de Jinotega (UTADC-8955).

This species was recorded in Nicaragua by Villa (1962, 1984), without providing information on voucher specimens or photographs from three localities: Matagalpa, Ocotal, and Las Manos. Recently, Fernández et al. (2017) provided the first verified record of *C. wilsoni* from Nicaragua at Cerro Mogotón, which lies near the locality of UTADC-8954 (Fig. 2).

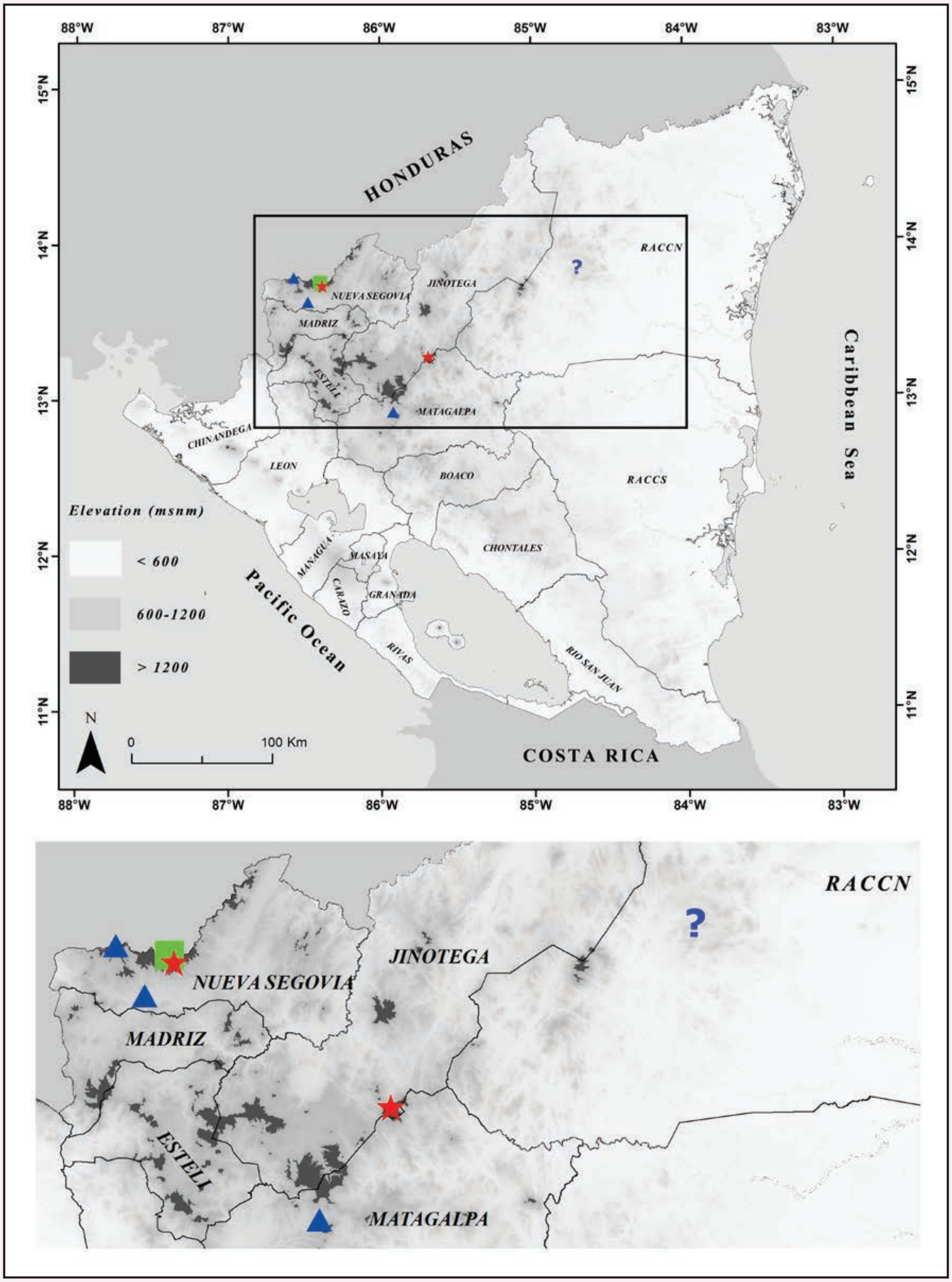

Fig. 2. Geographic distribution of *Cerrophidion wilsoni* in Nicaragua, showing the records provided by Villa (1962, 1984; blue triangles and question mark; see Fernández et al., 2017), Fernández et al. (2017; green square), and our records (red stars). Inset rectangle in map is zoomed below.

The individuals reported herein (UTADC-8954 and 8955 [the latter with an unusual dorsal pattern]) represent the second and third photo vouchers of *C. wilsoni* from Nicaragua, respectively (Fernández et al., 2017). In addition, UTADC-8954 represents the lowest verified elevation for this species in Nicaragua (560 m below the previous record), and UTADC-8955 represents a new record for the department of Jinotega and the southernmost record for this species, extending the distribution ca. 95 km to the SE from the closest verified record (Fernández et al., 2017; see Fig.2).

Acknowledgments.—We thank Johnathan Peter Hruska for allowing us to use his photograph of *Cerrophidion wilsoni*, and Gustavo Adolfo Ruiz for providing valuable information on the Peñas Blancas record. We also thank Carl J. Franklin for providing the photo voucher numbers.

Literature Cited

Fernández, M., J. G. Martínez-Fonseca, M. Salazar-Saavedra, L. Gutiérrez, J. Loza, and J. Sunyer. 2017. First verified record of *Cerrophidion wilsoni* (Reptilia: Squamata: Viperidae) from Nicaragua. Mesoamerican Herpetology 4: 481–484.

Holdridge, L. R. 1967. Life Zone Ecology. Tropical Science Center, San José, Costa Rica.

Savage, J. M. 2002. The Amphibians and Reptiles of Costa Rica: A Herpetofauna between Two Continents, between Two Seas. The University of Chicago Press, Chicago, Illinois, United States.

Villa, J. D. 1962. Las Serpientes Venenosas de Nicaragua. Editorial Novedades, Managua, Nicaragua.

Villa, J. D. 1984. The venomous snakes of Nicaragua: a synopsis. Milwaukee Public Museum Contributions in Biology and Geology 59: 1–41.

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Family Viperidae

***Crotalus triseriatus* Wagler, 1830.** MEXICO: HIDALGO: Municipio de Singuilucan, Ejido Los Romeros (20.00670°N, -98.43119°W; WGS 84) elev. 2,689 m; David Delgadillo-Mendoza and José Luis Delgadillo-García. On 24 July 2017, during a faunal diversity project a *Crotalus triseriatus* was observed in grassland within a pine forest management area. A photo voucher of this individual is deposited in the herpetological collection of the Centro de Investigaciones Biológicas, Universidad Autónoma del Estado de Hidalgo (CH CIB 095; Fig. 1). This voucher represents a new municipality record, with the closest known locality 25.1 km to the E (airline distance) in the vicinity of El Encinal, Municipio de Cuautepec de Hinojosa (Cruz-Elizalde, 2010; Ramírez-Bautista et al., 2010; 2014; Fernández-Badillo et al., 2017).

Fig 1. A *Crotalus triseriatus* (CH-CIB 95) from Ejido Los Romeros, Singuilucan, Hidalgo, Mexico.
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Literature Cited

Cruz-Elizalde, R. 2010. Análisis herpetofaunístico por tipos de vegetación en los municipios de Acaxochitlán y Cuautepec de Hinojosa, Hidalgo, México. Unpublished Licenciatura thesis, Universidad Autónoma del Estado de Hidalgo, Pachuca, Hidalgo, Mexico.

Fernández-Badillo, L., N. Morales-Capellán, C. R. Olvera-Olvera, G. Montiel-Canales, and I. Goyenechea. 2017. Guía de las Serpientes del Estado de Hidalgo. Universidad Autónoma del Estado de Hidalgo, Pachuca, Hidalgo, Mexico.

Ramírez-Bautista, A., U. Hernández-Salinas, R. Cruz-Elizalde, C. Berriozabal-Islas, D. Lara-Tufiño, I. Goyenechea, and J. M. Castillo-Cerón. 2014. Los Anfibios y Reptiles de Hidalgo, México: Diversidad, Biogeografía y Conservación. Sociedad Herpetológica Mexicana, Pachuca, A.C, Mexico.

Ramírez-Bautista, A., U. Hernández-Salinas, F. Mendoza-Quijano, R. Cruz-Elizalde, B. P. Stephenson, V. D. Vite-Silva, and A. Leyte-Manrique. 2010. Lista Anotada de los Anfibios y Reptiles del Estado de Hidalgo, México. Universidad Autónoma del Estado de Hidalgo, Pachuca, Hidalgo, and Comisión Nacional para el Conocimiento y Uso de la Biodiversidad, México, D.F., Mexico.

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Reptilia: Testudines

Family Kinosternidae

***Kinosternon scorpioides* (Linnaeus, 1766).** MEXICO: HIDALGO: Municipio de Huejutla de Reyes (21.1427833°N, -98.3927833°W; WGS 84); elev. 148m; 29 July 2017; Claudio Alberto Mendoza-Paz. The turtle was found crossing a road at 1930 h, where it was photographed *in situ*. A photo voucher (CH-CIB 98; 98a; Fig.1) is deposited in the photographic collection of the herpetological collection of the Centro de Investigaciones Biológicas, Universidad Autónoma del Estado de Hidalgo. This voucher represents a new municipality record, with the closest published locality 111.09 km to the N (airline distance) in the vicinity of Villa Guerrero (Viejo Peñitas), Municipio de Tamuín, San Luis Potosí (Dixon and Lemos-Espinal, 2013). This voucher represents the second record for *Kinosternon scorpioides* in Hidalgo, with the other record located 114.33 km to the SW (airline distance) in the vicinity of 11.2 km of Zimapán, on the road to Querétaro (Lemos-Espinal and Dixon, 2016). Our record also reconfirms the presence of this species in the state of Hidalgo, as Manríquez-Morán et al. (2017) did not consider this species in a recent list of the non-avian sauropsids of the state.

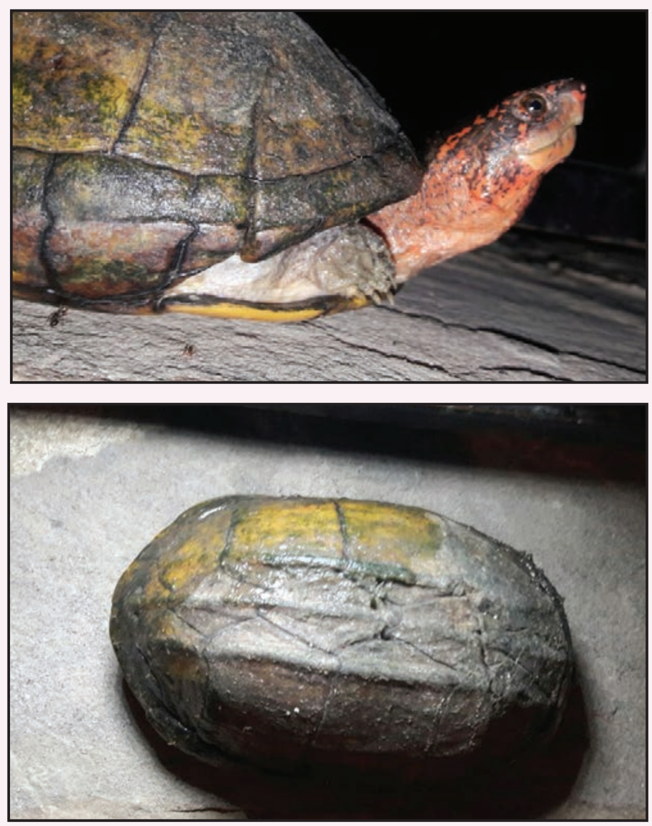

Fig 1. (A) Lateral (CH-CIB 98) and (B) dorsal (CH-CIB 98a) views of an adult *Kinosternon scorpioides* from Municipio de Huejutla de Reyes, Hidalgo, Mexico.
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Acknowledgments.—A special thanks goes to Irene Goyenechea for allowing us to deposit the photo in the photographic collection of the Herpetological Collection of the Centro de Investigaciones Biológicas, and to Luis Canseco-Márquez for confirming the identification of the species.

Literature Cited

Dixon, J.R., and J. A. Lemos-Espinal. 2013. Amphibians and Reptiles of San Luis Potosí. Eagle Mountain Publishing, LC, Eagle Mountain, Utah, United States.

Lemos-Espinal, J. A., and J. R. Dixon. 2016. Anfibios y Reptiles de Hidalgo, México / Amphibians and Reptiles of Hidalgo, Mexico. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad, Ciudad de México, Mexico.

Manríquez-Morán, N. L., J. M. Castillo-Cerón, I. Goyenechea Mayer-Goyenechea, R. Cruz-Elizalde, U. Hernández-Salinas, D. Lara-Tufiño, L. M. Saldaña-Badillo, C. Berriozabal-Islas, and A. Ramírez-Bautista. 2017. Riqueza y diversidad de saurópsidos (no aves) del estado de Hidalgo. Pp. 505–528 *In* Ramírez-Bautista, A., A. Sánchez-González, G. Sánchez-Rojas, and C. Cuevas-Cardona (Eds.), Biodiversidad del Estado de Hidalgo. Tomo II. Universidad Autónoma del Estado de Hidalgo/Consejo Nacional de Ciencia y Tecnología, Pachuca de Soto, Hidalgo, Mexico.

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MISCELLANEOUS NOTES

***Smilisca manisorum* Taylor, 1954. Country and size records.** *Smilisca manisorum* (no common name) is a species of hylid treefrog that McCranie (2011) recently resurrected from the synonymy of *Smilisca baudinii*, and is known from the Caribbean lowlands of northeastern Honduras to eastern Costa Rica. On 26 December 2010 at 2044 h, a female *S. manisorum* measuring 94 mm in snout–vent length (SVL) was found in northwestern Panama, Bocas del Toro Province (9°28'31.8"N, -82°34'28.4"W; WGS 84; elev. 29 m) at the edge of a fallow pasture adjacent to a small wetland (Fig. 1A). On 27 December 2010 at 2122 h, another female *S. manisorum* (92 mm SVL) was found within 100 m of the same locality (Fig. 1B). These specimens represent new maximum size records; the previous record was 90 mm SVL (Duellman and Trueb, 1966). In addition, these are the first records of *S. manisorum* from Panama, extending the known distribution 41 km to the ESE of the nearest record from Suretka, Costa Rica (KU 36788-9). Due to the abundance of suitable habitat throughout the Atlantic lowlands of Panama, the southeastern extent of this species' distribution probably has not been determined. The potential reason(s) for finding record-sized individuals at the same location merits further study. This species may exhibit regional or population-level variation in maximum size. Alternatively, both individuals might have been siblings, and thus the larger sizes were attained because they were related females. Lastly, both might have sequestered high quality resources that led to the attainment of a larger size, or it may have been coincidental.

Fig. 1. Record-sized (A = 94 mm SVL, B = 92 mm SVL) and first individuals of *Smilisca manisorum* recorded from Panama.
© Kevin M. Enge

Acknowledgments.—We thank James R. McCranie for confirming the identification of the species, and Jay Savage for locating the previous museum records of *Smilisca manisorum* from Suretka, Costa Rica.

Literature Cited

Duellman, W. E., and L. Trueb. 1966. Neotropical hylid frogs, genus *Smilisca*. University of Kansas Publications, Museum of Natural History 17: 281–375.

McCranie, J. R. 2017. Morphological and systematic comments on the Caribbean lowland population of *Smilisca baudinii* (Anura: Hylidae: Hylinae) in northeastern Honduras, with the resurrection of *Hyla manisorum* Taylor. Mesoamerican Herpetology 4: 512–526.

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Habitat diversification and natural history observations in *Norops utilensis* (Squamata; Dactyloidae) on Isla de Utila, Honduras

The Utila Anole, *Norops utilensis* (Köhler, 1996), a poorly known member of the *Norops pentaprion* group, is "known to occur only at low elevations on the eastern end of Isla de Utila" (McCranie and Köhler, 2015: 196). Although *N. utilensis* currently is not listed by the IUCN (www.iucnredlist.org; accessed 11 October 2017), Johnson et al. (2015) assessed it a high Environmental Vulnerability Score (EVS = 19), and Gutsche et al. (2004) and McCranie and Köhler (2015) referred to this species as critically endangered.

Gutsche et al. (2004: 301) reported that, "since 1995 only 13 specimens of *N. utilensis* have been seen or collected," and also noted (p. 297) that this anole occurs "exclusively in a specialized habitat – the highly dynamic and salty mangrove swamps," where it utilizes trunks, limbs, and the branches of trees at heights from 0 to 6 m above the ground. This habitat consists predominantly of Black Mangrove (*Avicennia germinans*) and Red Mangrove (*Rhizophora mangle*), as reported by Fickert and Grüninger (2010). Reproduction in *N. utilensis* within *R. mangle* habitat has been documented (Gutsche et al., 2004; Hallmen et al., 2012; McCranie and Köhler, 2015).

Here we report 18 field observations (4 males, 9 females, and 5 sex undetermined) of this little known species outside of mangrove environments, and present evidence for a range extension and habitat diversification within the island. We also provide brief comments on its distribution, and include such unrecorded aspects of its behavior and natural history as niche partitioning, diurnal habitat use, and nocturnal sleeping sites. A substantial degree of habitat diversification was the most noteworthy finding, as we document the presence of *N. utilensis* a considerable distance away from mangrove habitat. Furthermore, we record the sympatric occurrence of both species of anoles endemic to Isla de Utila (*N. utilensis* and *N. bicaorum*) for the first time, and provide photographs of both sexes for *N. utilensis* (Figs. 1, 2). We consider this information of significant importance for future research and conservation planning for these anoles on the island.

Fig. 1. (Left) A male *Norops utilensis*, alert but in sleeping position, found in a fragmented patch of broad-leaf forest adjacent to the Kanahau Utila Research & Conservation Facility, Isla de Utila, Honduras. (Right) A manual extension of the large dewlap reveals its "geranium pink" coloration. © Tom W. Brown

Fig. 2. (Left) A female *Norops utilensis* in a similar position and from the same locality as in Fig. 1. (Right) Note the manually extended dewlap, which comparatively is noticeably smaller in size than that of males. © Tom W. Brown

Study Methods

We conducted diurnal and nocturnal Visual Encounter Surveys (VES) at various locations and habitats across Isla de Utila, in an effort to gather broad-range data on the abundance, distribution, and ecology of the island's endemic anoles. The information we present for *N. utilensis* results from preliminary and opportunistic observations facilitated through the research of *N. bicaorum*, a project supported by the Mohammed bin Zayed Species Conservation Fund (www.speciesconservation.org). All encountered individuals had GPS points (WGS 84) taken to plot their distribution, as well as identifying the habitat type based on plant composition. When applicable, we collected morphometric data for captured individuals, and used a Kestrel 5500 weather station to take the microclimate variables (Temperature, Relative Humidity and Wind speed) for the anole positions.

Distribution

Norops utilensis previously was known only from "near sea level to 8 m elevation" on the eastern side of Isla de Utila (McCranie and Köhler, 2015: 198). We conducted herpetological surveys within a wide range of relevant Red, Black, and White mangrove habitats similar to those described above for *N. utilensis*: Ironbound (16.121233°N, -86.899123°W) 33 visits; Big Bight pond (16.0952333°N, -86.8838333°W) 3 visits; Aliah's channel (16.07966°N, -86.98255°W) 7 visits; and Turtle Harbour (16.113160°N, -86. 941234°W) 5 visits; the last locality is the only recognized protected terrestrial area on Isla de Utila. Despite the number of total visits to these sites (from March of 2016 to July of 2017), we were unable to locate *N. utilensis* in these areas.

Norops utilensis is a rather cryptic species and thus difficult to locate, and considering the published observations still might be found at these localities. As a testament to the apparent scarcity of *N. utilensis*, we estimate that during the time it took us to observe 18 individuals of *N. utilensis* across the island, we observed > 350 individuals of *N. bicaorum* across the same sites (TWB, unpublished). We suggest the population density of *N. utilensis* is considerably lower than that of *N. bicaorum*, or that its strict arboreality simply eludes conventional search methods. Nonetheless, we did not observe any anoles in mangrove habitats except for some *N. bicaorum* in areas of White Mangrove (*Laguncularia racemosa*) bordering the coastal forest vegetation; notably, however, areas of Red Mangrove, such as those described by Gutsche et al. (2004), are difficult to access and survey. Despite the apparent scarcity of *N. utilensis*, the strictly arboreal habits of this species provide an impediment to conventional searching methods. Similar to the information provided by McCranie and Köhler (2015), we found that *N. utilensis* occupies a small distribution along the eastern portion of Isla de Utila, and that this species requires conservation planning for its future protection.

Habitat Diversification and Sympatric Resource Use

In stark contrast to the information reported for *N. utilensis* in the literature, we observed a substantial degree of habitat diversification within this species. We encountered *N. utilensis* in an area called Pumpkin Hill (16.12003°N, -86.88223°W), which is the highest point on Isla de Utila (elev. 74 m). At the top of the hill, in an area of *Acoelorrhaphe wrightii* dominated broad-leaf palm forest (Fickert and Grüninger, 2010) between April and May of 2016, we found three individuals of *N. utilensis* occurring sympatrically with large numbers of *N. bicaorum*, a previously unrecorded association between these insular endemics. We observed one individual of *N. utilensis* (found ca. 4.5 m above the ground at ca. 1440 h) for 20 min on the same tree trunk as a male *N. bicaorum* (1 m above the ground), and neither interacted with the other. We observed the second individual at ca. 1100 h, basking on a tangled limb of a tree (*Ficus* sp.) ca. 6 m above the ground, and we encountered the third individual, a female, sleeping in a horizontal position ca. 2 m above the ground in close proximity (ca. < 1.5 m) to a female *N. bicaorum.* As a result of these observations, we report a slight increase in the maximum elevation of *N. utilensis*, from 8 m (McCranie and Köhler, 2015) to 74 m above sea level.

We also observed the sympatric use of habitat between both endemic anoles within the grounds of Kanahau Utila Research & Conservation Facility (KURCF), in a small, semi-disturbed, fragmented patch of tropical broadleaf/palm forest (16.119383°N, -86.884989°W). On 13 April 2017 at 2030 h, we encountered a male *N. utilensis* sleeping in close proximity (< 70 cm) to a male *N. bicaorum*, while sharing the fronds of the same plant (*A. wrightii*) at respective heights of 3.4 m and 2.7 m above the ground. We identified the individuals as separate species based on their distinct dewlap and body coloration (see, Figs. 1, 2).

On 14 April 2017 at 1300 h, we observed the same male *N. utilensis* seen the previous day on the side of a large broad-leaf trunk (which contacted the fronds of the above-mentioned *A. wrightii*), basking in a sun-lit section at a height of ca. 7 m above the ground and occasionally moving around the trunk before reappearing. The same male *N. bicaorum* seen the previous day was moving along the base of this tree at heights between 0.5 and 2 m, but he also descended occasionally to forage at ground level on the leaf-litter. Although we observed both individuals for ca. 2 h, neither showed any interaction. On several other occasions in April of 2017, we observed individuals of both species active during the day on the same tree, appearing to be mostly separated from one another by the heights each used for foraging

On 1 August 2017 from 1100 to 1120 h, we observed two female *N. utilensis* in a nearby broad-leaf forest patch, which were active on trunks within an area of ca. 30 m^2 that also was occupied by five *N. bicaorum* (2 males, 3 females). Both of the female *N. utilensis* were positioned vertically upward on trunks at an average height of 2.81 m above the ground, and at an average temperature of 30.4°C, relative humidity of 74.6%, and wind speed of 4.1 mph. All of the female *N. bicaorum* were positioned vertically downward on palm trunks at an average height of 0.86 m above the ground, and at an average temperature of 29.6°C, relative humidity of 82.1%, and wind speed of 2.2 mph. The two male *N. bicaorum* also were in the same position as the females, and their respective average values were 1.68 m, 29.7 °C, 77%, and 3.2 mph. Although a larger sample size would be desirable to support and supplement this data, an initial examination of the values seems to corroborate our hypothesis for a vertical niche separation between both anole species, as well as between the sexes in *N. bicaorum*.

Sleeping Observations

On 1 May 2017 from 2100 to 2200 h, we observed the sleeping sites of five individuals of *N. utilensis* on the grounds of KURCF, all within an area of ca. 25m^2; previously, the description of sleeping sites for *N. utilensis* had not been reported. We found one male on the surface of an *A. wrightii* at a height of ca. 4 m above the ground, in a downward position facing the tip of the frond. We found another male in a similar position at a height of 1.5 m, as well as another male sleeping horizontally between two broad-leaves touching a barbed wire fence at a height of ca. 1m above the ground (Fig 1.). We located an additional individual (sex undetermined) at a height of ca. 5m, sleeping on a thin vine that was swaying in the wind. Finally, we encountered a female *N. utilensis* sleeping on the underside of an *A. wrightii* frond at a height of ca. 3.5 m above the ground. We suggest that sleeping on the underside of a leaf demonstrates the arboreal/climbing abilities of this species, and to the best of our knowledge is an unusual (and perhaps undocumented) sleeping posture for anoles.

Additionally, between February and May of 2017, we observed six individuals of *N. utilensis* along a road ca. 500 m from KURCF, and between August and September found two females in a lower elevation patch of forest in the Pumpkin Hill vicinity; we located six of the eight individuals at night. We collected basic morphometric data on four of the females we encountered (snout–vent length [SVL] = 54–57 mm, body mass = 3.4–3.7 g); the SVL was consistent with the 57 mm maximum length for females reported by McCranie and Köhler (2015: 196).

General Discussion

The observations of *Norops utilensis* in dry hardwood forest habitat were unexpected and unusual, especially considering the large population of *N. bicaorum* in this area (Brown et al., 2017) and the significant distance from mangrove habitat. *Norops utilensis* was thought to be one of two lizard species on the island found exclusively in brackish mangrove swamps (along with *Ctenosaura bakeri*; see Gutsche, 2005), and by definition is an arboreal species that inhabits mangrove swamps (Köhler, 1996; Gutsche et al., 2004). In contrast to the impression that *N. utilensis* avoids competition from *N. bicaorum* by specializing in mangrove habitats, our observations suggest that *N. utilensis* is capable of inhabiting a select niche within an *N. bicaorum* dominated broad-leaf palm forest habitat, and apparently avoids inter-specific competition by occupying the higher understory and canopy layer during the day. Although we observed *N. bicaorum* occupying the canopy and understory niche at the Pumpkin Hill site, this rarely was at a height > 5 m above the ground, and often was the result of climbing as a means to escape. Most individuals of *N. bicaorum* have been observed foraging at heights from 0 to 2 m above the ground (Brown et al., 2017), whereas those of *N. utilensis* generally have been observed at greater heights (3 to > 7 m). Previous research of anole communities found sympatrically occurring species to be separated by narrowly defined niches (Losos 1994; Irschick et al. 2005; D'Cruze and Stafford 2006). Although further research is needed to understand the interspecific relationships of Utila's anoles, obviously these species are capable of sympatric occurrence and avoiding direct competition within the same habitat, even while contemporaneously using such resources as *A. wrightii*, an important and abundant palm that provides ideal understory sleeping sites for both species. The sympatric occurrence and resource partitioning between these two insular endemics had not been documented.

Previous to our observations, the farthest distance recorded for the occurrence of *N. utilensis* from a mangrove swamp was 250 m, where an individual was found on a fencepost adjacent to broad-leaf forest (Hallmen et al., 2012). Additionally, McCranie and Köhler (2015: 277) noted that *N. utilensis* "needs to have its remaining mangrove habitat in Utila protected from human destruction or it might not survive for the long term". However, they proceeded to acknowledge that "*N. utilensis* had recently been found several times outside of mangrove habitat, hopefully signifying an adaptation to other habitat types as its primary habitat is altered". Our observations suggest that *N. utilensis* is a more adaptable species than previously recorded, providing definitive evidence confirming the presence of individuals at a considerable distance (> 1.5 km) from the nearest mangrove habitat, where they occupy broad-leaf/palm forest and disturbed secondary growth adjacent to agricultural fields. Apparently, this species also can occur in broad-leaf forest, like other members of the *N. pentaprion* group (Avila-Pires, 1995; Lee, 1996; Savage, 2002). Our observations might significantly impact future conservation strategies for *N. utilensis*, as the distribution of this species no longer is limited to mangrove habitat.

Threats

The eastern portion of the island, and especially the road to Pumpkin Hill, currently is being developed and many of the larger trees and surrounding roadside vegetation is being removed to provide improved access. The vegetated fences along the road, however, seemingly act as important biological corridors. Such degree of deforestation and clearance of the natural habitat along the road could have a severe negative impact, as mature trees and remnant patches of forest appear essential for both of the endemic insular anoles to persist in areas adjacent to agricultural lands. Both mangrove and hardwood forest are increasingly threatened habitats on Isla de Utila, as most of these lands are privately owned and increasingly are being sold for development. We argue that the community of Utila must quickly recognize the importance of terrestrial habitats for its biodiversity, or risk further fragmenting the island's unique wildlife populations.

Conservation

Ideal conservation actions for *N. utilensis* would be to immediately prevent further unsustainable habitat modifications within its restricted core range on the eastern side of Isla de Utila. Such actions could be most easily achieved through the purchase of suitable properties that contain high populations of anoles, and by designating and protecting the land as a private nature reserve. Although the hardwood broad-leaf forest habitat on Isla de Utila is an important component of the island's biodiversity, currently none of this habitat has been designated for protection. Preliminary biodiversity research conducted through KURCF suggests that the broad-leaf habitats are crucial to the survival of many invertebrate, herpetofaunal, bird, and mammal species (especially bats). We find it encouraging that such a wide range of biodiversity (including *N. utilensis* and *N. bicaorum*) could be candidates for conservation by initiating protection of these unique island habitats.

The occurrence of *N. utilensis* in tropical palm and broad-leaf forest should have great implications on future conservation strategies for this anole, by providing a valued update and a foundation for conducting needed research in the future. We hope our observations on the natural history of this species, including its greater level of adaptability and interactions with a congener, contributes new and valuable information on Utila's little known endemic anoles.

Acknowledgments.—We thank the staff and volunteers at Kanahau Utila Research & Conservation Facility for the logistical, scientific, and field support that allowed us to undertake these observations on Isla de Utila, Honduras. We are especially grateful Steve Clayson and Andrea Martínez for their inspiration and expertise, and also acknowledge Kirsten E. Nicholson, Louis W. Porras and Gunther Kohler for their reviews prior to publication. Finally, we owe immense gratitude to the Mohammed Bin Zayed species conservation fund, for providing much needed financial support to study *Norops bicaorum*, which consequently facilitated many of the observations of its endemic congener. All data collection was performed with valid biological research and collection permits (Resolución DE-MP-054-2017 – Dictamen técnico ICF-DVS-169-2017; Dictamen técnico DAP-068-2017); for the project "Conservación de los reptiles y anfibios de Utila, Honduras" issued to DM and TWB of Kanahau (KURCF) by General Director Misael León and General Secretary Gudit Mariel Muñoz of Instituto Nacional de Conservación y Desarrollo Forestal, Áreas Protegidas y Vida Silvestre (ICF), Tegucicalpa, Honduras.

Literature Cited

Avila-Pires, T. C. S. 1995: Lizards of Brasilian Amazonia (Reptilia: Squamata). Zoologische Verhandelingen 299, Nationaal Natuurhistorisch Mnuseum, Leiden, The Netherlands.

Brown, T. W., D, F. Mayron, M. P. Van den Burg, and G. L. Lonsdale. 2017. Distribution and natural history notes on *Norops bicaorum* (Squamata: Dactyloidae) endemic to Isla de Utila, Honduras. Mesoamerican Herpetology 4: 493–497.

D'Cruze, N. C., and P. J. Stafford. 2006. Resource partitioning of sympatric *Norops* (beta *Anolis*) in a subtropical mainland community. Herpetological Journal 16: 273–280.

Fickert, T., and F. Grüninger. 2010. Floristic zonation, vegetation structure, and plant diversity patterns within a Caribbean mangrove and swamp forest on the Bay Island of Utila (Honduras). Ecotropica 16: 73–92.

Gutsche, A., J. R. McCranie, and K. E. Nicholson. 2004. Field observations on a nesting site of *Norops utilensis* Köhler, 1996. (Reptilia, Squamata), with comments about its conservation status. Salamandra 40: 297–302.

Gutsche, A. 2005. Distribution and Habitat Utilization of *Ctenosaura bakeri* on Utila. Iguana 12: 143–151.

Hallmen, M., and A. Huy. 2012. Natural History Notes. *Norops utilensis* (Utila Anole). Habitat. Herpetological Review 43: 642–643.

Irschick, D. J., E. Carlisle, J. Elstrott, M. Ramos, C. Buckley, B. Vanhooydonck, J. Meyers, and Herrel, A. 2005. A comparison of habitat use, morphology, clinging performance and escape behaviour among two divergent Green Anole lizard (*Anolis carolinensis*) populations. Biological Journal of the Linnean Society. 85: 223–234.

Johnson, J. D., V. Mata-Silva, and L. D. Wilson. 2015. A conservation reassessment of the Central American herpetofauna based on the EVS measure. Amphibian & Reptile Conservation 9(2) [General Section] 1:94 (e100).

Köhler, G. 1996. A new species of anole of the *Norops pentaprion* group from Isla de Utila, Honduras (Reptilia: Squamata: Iguanidae). Senckenbergiana Biologica 75: 23–31.

Lee, J. C. 1996: The Amphibians and Reptiles of the Yucatán Peninsula. Comstock Publishing Associates, Cornell University Press Ithaca, New York, United States.

Losos, J. B., and D. B. Miles. 1994. Adaptation, constraint, and the comparative method: phylogenetic issues and methods. Pp. 60–98 *In* P. C. Wainwright and S. M. Reilly (Eds.), Ecological Morphology: Integrative Organismal Biology. The University of Chicago Press, Chicago Illinois, United States.

McCranie, J. R., and G. Kohler. 2015. The Anoles (Reptilia: Squamata: Dactyloidae: *Anolis*: *Norops*) of Honduras: Systematics, Distribution, and Conservation. Bulletin of the Museum of Comparative Zoology, Special Publications Series, No. 1., Cambridge, Massachusetts, United States.

Savage, J. M. 2002. The Amphibians and Reptiles of Costa Rica: A Herpetofauna between Two Continents, between Two Seas. The University of Chicago Press, Illinois, United States.

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Distribution of *Phrynosoma ditmarsi* Stejneger, 1906, with notes on habitat and morphology

The Rock Horned Lizard (Camaleón de Piedra, in Spanish), *Phrynosoma ditmarsi*, is a poorly known Mexican endemic species with a distribution restricted to the state of Sonora. The International Union for Conservation of Nature (IUCN) has categorized this species as Data Deficient (Frost et al., 2007), but using the Environmental Vulnerability measure (EVS) Wilson et al. (2013) assessed this species with a score of 16, placing it in the middle portion of the high vulnerability category; these authors regarded *P. ditmarsi* as highly vulnerable to environmental degradation because of its narrow geographic and ecological distribution. The Secretaría del Medio Ambiente y Recursos Naturales (SEMARNAT) listed this species as threatened (amenazada) in 2002, but in 2010 did not indicate a protected status (SEMARNAT, 2002, 2010).

Initially, this species was collected on the Carl Lumholtz expeditions to Mexico in 1890–91, with the locality recorded as "Sonora." The type specimens were collected in 1897 "a short distance over the border of Arizona, in old Mexico, state of Sonora" (Stejneger, 1906: 565), again without an exact locality. The species was named in honor of Raymond L. Ditmars, herpetologist at the New York Zoological Society (later the Bronx Zoo). The type locality was thought to be from an area in Sonora between Naco, Agua Prieta, and Fronteras, based on a study of stomach contents from the holotype and paratype (Lowe et al., 1971, Roth, 1971). The species was not found again for 73 years, when mining engineer Paul Geiger discovered it on Rancho El Alacrán in the Sierra Manzanal (in an area now called the Sierra Alacrán) southeast of Cananea, and on Cerro La Palma east of Baviácora. Charles H. Lowe and his students Michael D. Robinson and C. Wayne Howard studied these populations (Lowe et al., 1971; Lowe and Howard, 1975). Three definitive localities were recorded in the 1970s (Rancho Alacrán, Cerro La Palma, Rancho La Palma), and two more in the 1980s (El Chorro and Tónichi), but see locality 1 below (Lowe et al., 1971; Lowe and Howard, 1975; Perrill, 1983; Sherbrooke et al. 1998). Rorabaugh et al. (2011) reported *P. ditmarsi* from a 2002 observation in Sierra Lampazos, and Burkhardt and Trageser (2015) reported *P. ditmarsi* from near Mina La Caridad in the Sierra Nacozari. Here we clarify two reported localities and summarize 11 new observations from the last 15 years, along with current knowledge about the habitat of this species and suggestions for field identification (Figs. 2, 3).

Fig. 1. Photographs of *Phrynosoma ditmarsi* reported from new localities in Sonora, Mexico: (A) Rancho Subitatechi; (B) Rancho Las Tierras de Jimenez; (C) Colonia Aribabi; and (D) Rancho Toribusi.

© Ana Lilia Reina-Guerrero (A), Stephen Minter (B), Hugo Silva-Kurumiya (C), and Michael Wilson (D)

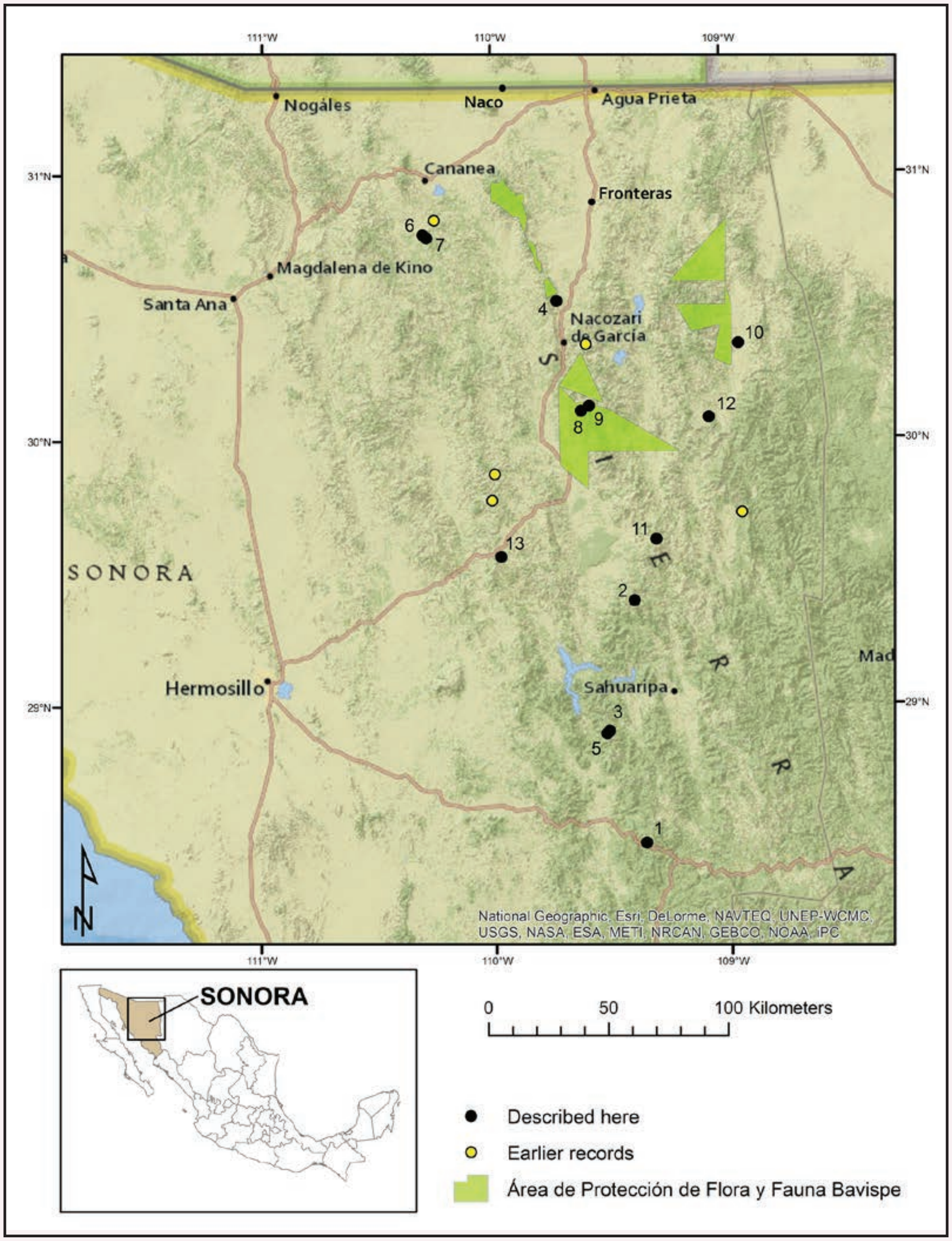

Fig. 2. Known distribution of *Phrynosoma ditmarsi*. Numbered dots refer to the localities described in the text.

Individuals of *P. ditmarsi* have been observed in March and from May to November, with most sightings occurring in July, September, October, and November.

Several of the new records suggest that the previously reported June–July parturition (Lowe and Howard, 1975; Montanucci, 1989) may extend into August, consistent with the summer rainy season in the region. The snout–vent length (SVL) of specimen #8, found 9 August, was consistent with neonate *P. ditmarsi* in captivity (25.5–26.8 mm SVL; Lowe and Howard, 1975).

Fig. 3. A comparison of juveniles of *Phrynosoma hernandesi* (left) and *P. ditmarsi* (right) showing the smooth vs. keeled ventral scales (A), and the deeper jaw on *P. ditmarsi* (B). © Charles Hedgcock

Distribution and Habitat

New observations include six new municipality records. Two of the new records were found within the boundaries of the Área de Protección de Flora y Fauna Bavispe, and two others were just outside of those boundaries, so the habitat of some populations is under protection.

Among the 18 localities now known, the elevation ranges from 1,004 to 1,679 m. The associated vegetation for 13 of the 18 localities was oak woodland (n = 6), or an ecotone of oak woodland with desert grassland (n = 4) or foothills thornscrub (n = 3). The remaining sites were in desert grassland (n = 3), foothills thornscrub (n = 1), or tropical deciduous forest (n = 1). Many were recorded as occurring on rocky hillsides.

All of the observations were in Sonora, Mexico. We present the geographical coordinates in NAD 1983. Unless stated otherwise, we recorded the observations with photo vouchers, which are available on the Madrean Discovery Expeditions fauna and flora database (MDE; www.madreandiscovery.org).

(1) Municipio de Ónavas, Rancho la Mula, 29 km SE of Río Yaqui on MEX 16 (28.48583°N, 109.35889°W); elev. 950 m; 14 March 1983. The individual was found in tropical deciduous forest. Perrill (1983: 123) indicated the locality as "ca. 23 km (airline) SE Hwy 16 bridge over the Rio Yaqui near Tónichi, ca. 165 km (airline) SE Hermosillo, Sonora at an elevation of approximately 1050 m." This locality is confusing, because Tónichi lies 3 km N of the Yaqui River bridge in the municipality of Soyopa, but this is not the collection locality. In an interview with Perrill in 2009, and a subsequent visit to the site by TVD, the locality was refined to the one indicated here.

(2) Municipio de Tepache, Sierra Lampazos, ca. 19.8 km (by air) SE of Tepache, ca. 40.5 km NNW of Sahuaripa (29.39861°N, 109.3975°W); elev. 1,600 m; 30 July 2002; Samia Carrillo-Percástegui and Reyna A. Castillo-Gámez. A juvenile (MDE-18972) was observed on a rocky mountainside, in oak woodland-foothills thornscrub ecotone. Previously, Rorabaugh et al. (2011) cited a vague locality.

(3) Municipio de Bacanora, Rancho Toribusi, Sierra Murrieta, 13.6 km (by air) SW of Bacanora, 14.5 km (by air) ESE of Presa El Novillo (28.90902°N, 109.51040°W); elev. 1,332 m; 7 September 2008; M. F. Wilson and M. Larson. An adult (UAZ 57571-PSV) was observed on a rocky limestone slope in oak woodland, which represents a new municipality record.

(4) Municipio de Nacozari de García, Rancho El Salto, Sierra La Púrica, 16.7 km (by air) NNW of Nacozari de García, Reserva Forestal Nacional & Refugio de Fauna Silvestre Ajos-Bavispe (30.52778°N, 109.71972°W); elev. 1,679 m; aspect 150°SSE, slope 30°; 10 September 2013; C. Roll, D. Turner, and C. Hedgcock. A juvenile female (MDE-18970; SVL = 32 mm, tail length = 5 mm, body mass =2.2g), was collected on a hillside 20 m from the ridgeline, on an abandoned dirt road set within dense grasses and herbaceous plants, along with *Quercus oblongifolia*, *Arctostaphylos pungens*, *Juniperus deppeana*, and *Mimosa dysocarpa*; the habitat consisted of oak woodland/desert grassland ecotone. The specimen was deposited at the Universidad Nacional Autónoma de México, Laboratorio de Ecología-UBIPRO, FES Iztacala UNAM, Estado de México by Julio A. Lemos-Espinal.

(5) Municipio de Bacanora, Rancho Las Tierras de Jimenez, 14.9 km (by air) SW of Bacanora, Sierra de Murrieta (28.89806°N, 109.52083°W); elev. 1,464 m; 1 August 2014; A. L. Reina-G., R. A. Villa, T. R. Van Devender, and S. Jacobs. One adult and one juvenile (MDE-189641) were observed on a rocky slope in oak woodland.

(6) Municipio de Cananea, 23.4 km (by air) S of Cananea, foothills of the Sierra Manzanal (30.77861°N, 110.30028°W); elev. 1,260 m; 13 September 2014; A. L. Reina-G. and T. R. Van Devender. One adult (MDE-18967) was observed on a rocky hillside in desert grassland, in sympatry with *P. solare.*

(7) Municipio de Cananea, Rancho El Chiltepín, 23.9 km (by air) S of Cananea, western foothills of the Sierra Manzanal (30.76755°N, 110.28377°W); elev. 1,246 m; 14 September 2014; C. Hedgcock and K. Hansen. One adult (MDE-18968) was observed in a rocky canyon in desert grassland.

(8) Municipio de Cumpas: Rancho El Mezquite, 16.1 km (by air) ESE of Los Hoyos, Sierra La Madera (30.11333°N, 109.61917°W); elev. 1,297 m; 9 August 2016; Norberto León del Castillo, J. E. Ruelas-C, D. A. Carranza-N., and J. M. Duarte-M. A juvenile (MDE-7963) was observed in oak woodland-desert grassland transition, which represents a new municipality record.

(9) Municipio de Cumpas: Rancho El Prieto, 18.1 km (by air) E of Los Hoyos, Sierra La Madera (30.1325°N, 109.58361°W); elev. 1,260 m; 13 September 2016; Norberto León del Castillo, D. A. Carranza-N., and J. M. Duarte-M. A juvenile (MDE-9295) was observed in oak woodland-grassland mosaic.

(10) Municipio de Bacerac, Bacerac (30.3622200°N, 108.9333300°W); elev. 1,071 m; 10 November 2016; Alfredo Ramirez-G., Hugo Silva-Kurumiya, and G. Yanes-A. An adult (MDE-10201) was observed in desert grassland, and represents a new municipality record. This species often is encountered along the edges of the town; some people keep them as pets.

(11) Municipio de Divisaderos, Rancho Subitatechi, Puerto La Sierrita, 16.8 km (by air) ENE of Divisaderos (29.62833°N, 109.29972°W); elev. 1,325 m; 23 November 2016; M. J. Galaz-G., A. L. Reina-G., and T. R. Van

Devender. An adult male (MDE-10280) was observed at 1110 h in desert grassland-oak woodland mosaic, and represents a new municipality record.

(12) Municipio de Huachinera, 2.9 km (by air) NE of Colonia Aribabi (30.08556°N, 109.06583°W); elev. 1,531 m; 9 September 2017; M. Arvizu-M. and H. Silva-Kurumiya. A juvenile (MDE-21217) was observed in oak woodland, and represents a new municipality record.

(13) Municipio de Moctezuma, Cañada La Carabina, Rancho La Montosa, 38.6 km SW of Moctezuma (29.56639°N, 109.96833°W); elev. 1,150 m; 22 September 2017 Hector Villa-C. and H. Silva-Kurumiya. A juvenile (MDE-21217) was observed in oak woodland-foothills thornscrub transition, and represents a new municipality record.

Distinguishing *Phrynosoma ditmarsi* from *P. hernandesi*

A possible reason for the scarcity of records for *Phrynosoma ditmarsi* is because of its morphological similarity with the more common and widespread *P. hernandesi*, especially among juveniles of these species. In general, both species are similar in appearance, as their horns are small or absent, although the absence is more pronounced in *P. ditmarsi*.

Three juveniles of *P. hernandesi* were found in Sierra La Púrica on the same day and within 4 km of a juvenile *P. ditmarsi* (#4 above). We compared them for field characteristics that might be useful in distinguishing juveniles of the two species (Table 1, Fig. 3), because most of the diagnostic characteristics are relative and less obvious on small individuals. The strongly keeled ventral scales present on *P. ditmarsi*, especially in the gular region, provided the easiest distinction, in contrast to the smooth granular scales on *P. hernandesi*. Also, the jaw on *P. ditmarsi* is much deeper with the mandibles expanding posteriorly to form a distinct triangle, and the tail on *P. ditmarsi* is much shorter.

Table 1. Morphological characteristics of juveniles of *Phrynosoma ditmarsi* and *P. hernandesi* from Sierra la Púrica, Sonora, Mexico.

Character	*P. ditmarsi*	*P. hernandesi* #1	*P. hernandesi* #2	*P. hernandesi* #3
Sex	Female	Female	Male	Male
Body Mass (g)	2.2	2.3	2.0	1.4
SVL (mm)	32	34	32	29
Tail (mm)	5	13	10	9
Ventral scales	Keeled	Smooth	Smooth	Smooth

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Literature Cited

Burkhardt, T. R., and S. Trageser. 2015. Geographic Distribution. *Phrynosoma ditmarsi* (Rock Horned Lizard). Herpetological Review 46: 60.

Frost, D. R., Hammerson, G. A., Gadsden. H., and W. Sherbrooke. 2007. *Phrynosoma ditmarsi*. The *Phrynosoma ditmarsi*. The IUCN Red List of Threatened Species 2007: e.T64074A12741807. (www.dx.doi.org/10.2305/IUCN.UK.2007.RLTS.T64074A12741807.en; accessed 1 October 2017).

Lowe, C. H., and C. W. Howard. 1975. Viviparity and reproductive pattern in *Phrynosoma ditmarsi* in Sonora, Mexico. Southwestern Naturalist 20: 265–270.

Lowe, C. H., M. D. Robinson, V. D. Roth. 1971. A population of *Phrynosoma ditmarsi* from Sonora, Mexico. Journal of the Arizona Academy of Science 6: 275–277.

Montanucci, R. R. 1989. The reproduction and growth of *Phrynosoma ditmarsi* (Sauria: Iguanidae) in captivity. Zoo Biology 8: 139–149.

Perrill, R. H. 1983. Geographic Distribution. *Phrynosoma ditmarsi* (Rock Horned Lizard). Herpetological Review 14: 123.

Rorabaugh, J. C., M. A. Gómez-Ramírez, C. E. Gutiérrez-González, J. E. Wallace, and T. R. Van Devender. 2011. Amphibians and reptiles of the Northern Jaguar Reserve and vicinity, Sonora, Mexico: a preliminary evaluation. Sonoran Herpetologist 24: 123–131.

Roth, V. D. 1971. Food habits of Ditmars' Horned Lizard with speculations on its type locality. Journal of the Arizona Academy of Science 6: 278–281.

SEMARNAT (Secretaría de Medio Ambiente y Recursos Naturales). 2001. Norma Official Mexicana NOM-059-ECOL-2001, protección ambiental–especies nativas de México de flora y fauna Silvestre–categorías de riesgo y especificaciones para su inclusión, exclusión o cambio–lista de especies en riesgo. Diario Oficial de la Federación, Segunda Sección, 6 de marzo de 2002, Ciudad de México, Mexico.

SEMARNAT (Secretaría de Medio Ambiente y Recursos Naturales). 2010. Norma Official Mexicana NOM-059-SEMARNAT-2010, protección ambiental–especies nativas de México de flora y fauna Silvestre–categorías de riesgo y especificaciones para su inclusión, exclusión o cambio–lista de especies en riesgo. Diario Oficial de la Federación, Segunda Sección, 30 de diciembre de 2010, Ciudad de México, Mexico.

Sherbrooke, W. C., B. E. Martin, and C. H. Lowe. 1998. Geographic Distribution. *Phrynosoma ditmarsi* (Rock Horned Lizard). Herpetological Review 29: 110–111.

Stejneger, L. A. 1906. New lizard of the genus *Phrynosoma* from Mexico. Proceedings of the United States National Museum 29: 565–567.

Wilson, L. D., V. Mata-Silva, and J. D. Johnson. 2013. A conservation reassessment of the reptiles of Mexico based on the EVS measure. Amphibian & Reptile Conservation 7: 1–47.

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Predatory attempts on *Ctenosaura pectinata* (Wiegmann, 1834) and *Tropidodipsas philippii* (Jan, 1863) by *Felis catus* Schreber, 1777 (Mammalia: Felidae)

The introduction of exotic species, those that are not native or indigenous to a particular region (Lillywhite, 2008), has been identified as one of the most important species extinction factors and is known to act synergistically with other threats, such as habitat loss for deforestation (Álvarez-Romero and Medellín, 2005). The expansion of humans into urbanized and rural areas frequently is accompanied by the introduction of feral fauna into the surrounding natural environments. Arguably, invasive mammalian predators have been noted as the most damaging group of exotic species that affect biodiversity, and the Domestic Cat (*Felis catus*) has been noted as the second largest invasive predator linked to the extinction of bird, mammal, and reptile species (Doherty et al., 2016). Although the most impacted species of reptiles have been reported in Central America (as well as in Micro-/Mela-Polynesia; see Doherty et al, 2016), the actual number of species affected in this region might be underestimated, because only 40% of the reptile species have been evaluated by the IUCN (Meiri and Chapple, 2016). Herein, we report two predatory attempts by *F. catus*, one on the Western Spiny-tailed Iguana (*Ctenosaura pectinata*), and the other on Phillippi's Snail-eating Snake (*Tropidodipsas philippi*).

Ctenosaura pectinata is a Mexican endemic species distributed along the Pacific coast from Sinaloa to Oaxaca, including the Balsas Basin (Uetz et al., 2016). People sometimes use this iguanid as food, but in the northern portion of its distribution (Jalisco, Colima, Nayarit, and Sinaloa) this is seldom the case, perhaps because *C. pectinata* is abundant along the periphery of many towns. In contrast, *T. philippi* is a Mexican endemic distributed along the Pacific coast (from Sinaloa to western Oaxaca; Canseco-Márquez et al., 2007), but in Nayarit this species only is known from a single specimen, from Carrillo Puerto in the municipality of Compostela (Woolrich-Piña et al., 2016).

On 16 April 2017 at 1035 h, one of us (JALB) observed a *F. catus* stalking and attempting to capture a young *C. pectinata* in Playa Novillero, Municipio de Tecuala, Nayarit, Mexico (22.353836°N, 105.676711°W; WGS 84; elev. 1 m). Soon after, the *F. catus* captured the *C. pectinata* (Fig. 1), and for ca. 10 min both animals engaged each other in a confrontation. Eventually, the cat was distracted and the iguana took this opportunity to escape, although it had sustained considerable injuries to the head and neck.

The second observation occurred on 2 September 2017 at 2100 h, when one of us (AMM) observed two adult *F. catus* attempting to capture a *T. philippi* in the courtyard of a house in Bella Vista, Municipio de Tepic, Nayarit, Mexico (21.563378°N, 104.881953°W; WGS84; elev. 885 m). After the cats chased and cornered the snake, presumably for food (Fig. 2), the snake attempted to escape but suddenly remained still, a behavior that apparently surprised the cats because they stopped engaging the snake. The cats then were chased away, and the snake took this opportunity to escape into the darkness.

Similar predation events by *F. catus* likely are common with *C. pectinata*, which is an abundant species throughout much of its distribution. In contrast, however, *T. philippi*, is an extremely uncommon species in Nayarit, which suggests that feral fauna, especially *F. catus*, could represent a major threat for this snake. To our knowledge, these are the first documented cases of predatory attempts by *F. catus* on the native reptile fauna of Nayarit.

Fig. 1. Attempted predation by a Domestic Cat (*Felis catus*) on a Western Spiny-tailed Iguana (*Ctenosaura pectinata*) at Playa Novillero, Municipio de Tecuala, Nayarit, Mexico.

Fig. 2. Attempted predation by a Domestic Cat (*Felis catus*) on a Phillippi's Snail-eating Snake (*Tropidodipsas philippii*) in Bella Vista, Municipio de Tepic, Nayarit, Mexico. © Alberto Madueño-Molina

Literature Cited

Álvarez-Romero, J. and R. A. Medellín. 2005. *Felis silvestris*. Vertebrados superiores exóticos en México: diversidad, distribución y efectos potenciales. Instituto de Ecología, Universidad Nacional Autónoma de México. Bases de datos SNIB-CONABIO. Proyecto U020. México, D.F., Mexico.

Canseco-Márquez, L., A. García Aguayo, and P. Ponce-Campos. 2007. *Tropidodipsas philippii*. The IUCN Red List of Threatened Species 2007: e.T64000A12733069. (www.dx.doi.org/10.2305/IUCN.UK.2007. RLTS.T64000A12733069.en; accessed 13 September 2017).

Doherty, T. S., A. S. Glenn, D. G. Nimmo, E. G. Ritchie, and C. R. Dickman. 2016. Invasive predators and global biodiversity loss. Proceedings of the National Academy of Sciences of the United States of America 114: 11,261–11,265.

Lillywhite, H. B. 2008. Dictionary of Herpetology. Krieger Publishing Company, Malabar, Florida, United States.

Meiri, S., and D. G. Chapple. 2016. Biases in the current knowledge of threat status in lizards, and bridging the 'assessment gap'. Biological Conservation. http://dx.doi.org/10.1016/j.biocon.2016.03.009.

Uetz, P., P. Freed, and J. Hošek (Eds.). 2016. The Reptile Database. (www.reptile-database.org; accessed 13 September 2017).

Woolrich-Piña, G. A., P. Ponce Campos, J. Loc-Barragán, J. P. Ramírez-Silva, V. Mata-Silva, J. D. Johnson, E. García Padilla, and L. D. Wilson. 2016. The herpetofauna of Nayarit, Mexico: composition, distribution, and conservation. Mesoamerican Herpetology 3: 376–448.

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New distribution and habitat records for *Atropoides indomitus* (Serpentes: Viperidae), a Honduran endemic

Jumping pitvipers (genus *Atropoides*) consist of six named species that are endemic to Mesoamerica, and collectively they inhabit low to moderate elevations from northeastern Mexico to central Panama (McCranie, 2011; Jadin et al., 2012; Wallach et al., 2014). Two species, *A. indomitus* Smith and Ferrari-Castro and *A. mexicanus* (Duméril, Bibron, and Duméril), are known to occur in Honduras (McCranie, 2011; McCranie et al., 2013; Solís et al., 2014; McCranie, 2015).

The Indomitable Jumping Pitviper (*A. indomitus*) is a relatively small Honduran endemic that only is known from a few localities in the departments of Olancho (Parque Nacional La Muralla, Montaña de Botaderos, and Parque Nacional Sierra de Agalta), Colón (Montaña de Botaderos), and El Paraíso (Cerro Quiebra Cajón) (Smith and Ferrari-Castro, 2008; McCranie, 2011; McCranie et al., 2013; Medina-Flores et al., 2016). Herein, we report two new localities, with each representing a new departmental record for this species.

The first snake was found on 19 May 2015 at 1940 h, in Municipio de San Juan de Ojojona, Departamento de Francisco Morazán (13°56'29.6"N, 87°21'16.1"W; WGS 84; elev. 1,681 m; Fig. 1A), by José Mario Solís, Rony E. Valle, Mario Espinal, Carlos O'Reilly, and Leonel Marineros. The individual was encountered at night in subhumid pine-oak forest, inside a well (ca. 10 m deep) with some water at the bottom. From the evidence observed at the site, the snake likely had fallen inside the well while escaping an extensive fire in the area.

Fig. 1A. A female *Atropoides indomitus* found in Municipio de San Juan de Ojojona, Departamento de Francisco Morazán, Honduras (MZUCR 22895). © José Mario Solís

Fig. 1B. Pine-oak forest in Altos de Guerisne, in the municipality of Ojojona, department of Francisco Morazán, Honduras. © José Mario Solís

To verify the identification of the snake, we collected skin and muscle tissues and fixed the specimen in 95% alcohol, and deposited it at the Museo de Zoología de la Universidad de Costa Rica (MZUCR 22895). We then compared the morphological and genetic data from this individual to that available for specimens of *A. indomitus*.

We used the terminology of Smith and Ferrari-Castro (2008) and McCranie et al. (2013) for comparing the morphological data, and collected the length data to the nearest mm using a tape measure, as follows: (snout–vent length = SVL; total length = TOL; tail length = TAL; and rate of the relationship between tail length/total length = TAL/TOL). We then recorded the following measurements and scalation characters of our specimen: SVL = 394 mm; TOL = 495 mm; TAL/TOL = 0.145; sex = female; ventrals = 143; subcaudals = 41; and the presence of one prelacunal scale and a canthal ridge. The specimen differs from females of *A. indomitus* from other localities (see McCranie et al., 2013) in the number of subcaudals scales (41, vs. 31 in one female from El Paraíso and 30 in two females from Olancho), the number of ventral scales (143, vs.142 in a female from El Paraíso and 140 in a female from Olancho), and the average between the TAL/TOL (0.145, vs. 0.117 in a female from El Paraíso and 0.119 in a female from Olancho).

For comparing the genetic data, we isolated genomic DNA from tissues by first digesting a small piece in 50 µl of lysis buffer with 20 µl of proteinase K and incubating the solution at 56 °C for 24 h. After incubation, 25 µl of the digested solution was mixed with 45 µl of "serapure" (Roland and Reich, 2012) magnetic beads (a ratio of 1.8:1 serapure:solution). The remaining steps of DNA extraction follow the procedure for cleaning PCR product with AMPure® magnetic beads (Agencourt®, Bioscience, Beverly, Massachusetts, United States).

The mitochondrial gene NADH dehydrogenase subunit 4 (ND4) was amplified using the forward primer ND4 (5'-CAC CTA TGA CTA CCA AAA GCT CAT GTA GAA GC-3') and the reverse primer LEU (5'-CAT TAC TTT TAC TTG GAT TTG CAC CA-3'). The ND4 thermal cycle profile consisted of an initial denaturation at 94°C for 3 min followed by 30 cycles of a 30 s denaturation at 94°C, a 45 s annealing phase at 52°C, and a 1 min extension at 72°C, which was followed by a final 7 min extension at 72°C. Sequencing reactions in both primer directions were performed using standard protocols associated with BigDye® terminator chemistry (Applied Biosystems, Foster City, California, United States) at the UTA genomics core facility (Arlington, Texas, United States; http://gcf.uta.edu). We assembled and cleaned the resulting sequence using Sequencher 4.8 (Genecodes, Ann Arbor, Michigan, United States) and aligned it with other *Atropoides* sequences available on GenBank using MUSCLE (Edgar, 2004) implemented in MEGA 6.0 (Tamura et al., 2013). The sequence of the gene fragment amplified for this study is available on GenBank under accession number KX638451.

We generated maximum likelihood trees using the program RaxML GUI (Silvestro and Michalak, 2012) with partitions set to each codon position, and the model of molecular evolution set to GAMMAGI, and used *Cerrophidion godmani* as an outgroup. Support for the ML tree was calculated using 1,000 bootstrap replicates. We visualized the ML tree using the program Fig Tree 1.4.0 (Edgar, 2004). Using MEGA 6.0 (Tamura et al., 2013), we calculated the uncorrected pairwise distance within *A. indomitus*.

The specimen from Francisco Morazán (MZUCR 22895; Fig. 1A) falls within a strongly supported clade with other specimens of *A. indomitus*. The pairwise distance within this clade is between 0.008 and 0.012 substitutions per site. This clade is strongly supported as sister to a clade that contains *A. mexicanus*, *A. nummifer*, and *A. olmec*.

The second *A. indomitus* was found on 23 March 2016 at 0830 h, in Municipio de San Marcos de Colón, Departamento de Choluteca (13°21'14.90"N, 86°45'34.91"W; WGS 84; elev. 1,613 m), by Luis Gualberto Zuniga and Josué Bonilla. The snake was not collected, but a photo voucher of this individual is deposited at The University of Texas at Arlington Collection of Vertebrates Digital Collection (UTADC-8953; Fig. 2A). The snake was encountered under a pile of rotting logs, in a patch of severely fragmented broadleaf rainforest (Fig. 2B). This voucher represents the southernmost record for this from throughout its distribution.

The first locality where a specimen of *A. indomitus* was collected also is known as "Alto de (meaning 'highland of') Guerisne," Ojojona, in the department of Francisco Morazán, and the second locality is known as Cerro El Picacho, San Marcos de Colón, in the department of Choluteca. The elevation of these localities, at 1,681 m and 1,613 m, respectively, are the second and the third highest known for this species. Although previous reports have indicated an elevational range for this species extending from 670 to 1,200 m, Medina-Flores et al. (2016) recently reported a record of 1,910 m from Parque Nacional Sierra de Agalta. The two localities reported herein also lie well above the previously reported maximum elevation. The habitat for the first snake consists of pine-oak forest (Fig. 1B; House and Mejía, 2002), which covers approximately 4.5 million ha in the central part of the country. In general, pine-oak forest in Honduras occurs on mountainous and rugged areas of the country, and is characterized by steep slopes with recent and shallow soils (Wilson and Townsend, 2007). Previously, this species was known to inhabit humid broadleaf forest, but the area where an individual from the department of El Paraíso was found consisted of a mixture of pine-oak forest and broadleaf rainforest (McCranie et al., 2013). This situation suggests that *A. indomitus* potentially is more widespread than previously thought. McCranie et al. (2013) suggested that remnant populations of *A. indomitus* might occur at several localities within the department of Francisco Morazán (Montaña el Chile, Sierra de Misoco, Montaña de la Flor and Montaña de Yoro) that contain pockets of humid vegetation. Nevertheless, the mountain where the second individual of *A. indomitus* was observed lies in the Cordillera del Sur, in extreme southern Honduras and along the border with Nicaragua, so perhaps this species eventually will be found in the northwestern part of this country.

Fig. 2A. A subadult (total length ca. 350 mm) *Atropoides indomitus* photographed *in situ* (UTADC-8953) in Municipio de San Marcos de Colón, Departamento de Choluteca, Honduras. © Josué Bonilla

Fig. 2B. Severely fragmented humid broadleaf rainforest at Cerro El Picacho, in the municipality of San Marcos de Colón, department of Choluteca, Honduras. © Josué Bonilla

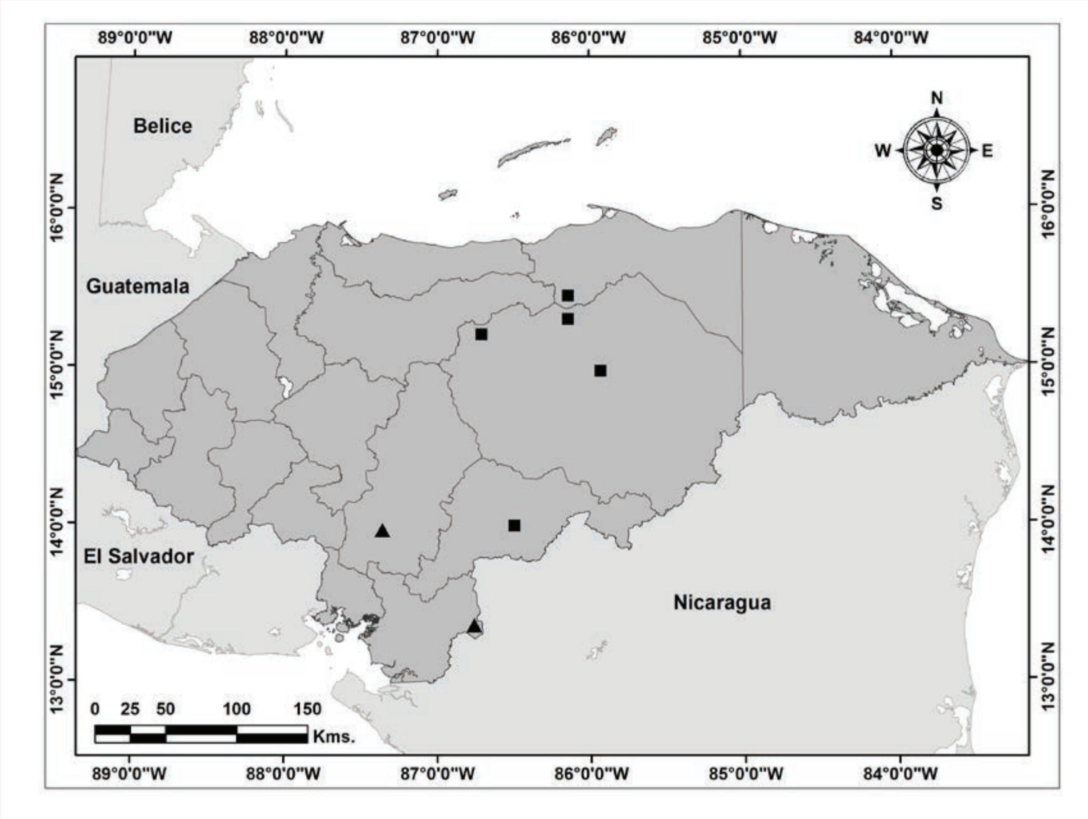

Fig. 3. Reported localities for *Atropoides indomitus* (squares), and new localities from the departments of Francisco Morazán and Choluteca (triangles). Map courtesy of Jorge Funez.

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Literature Cited

Edgar, R. C. 2004. MUSCLE: multiple sequence alignment with high accuracy and high throughput. Nucleic Acid Research 32: 1,792–1,797.

House, P., and T. Mejía. 2002. Mapa de ecosistemas vegetales de Honduras. Manual de consultas. AFE/COHDEFOR. Proyecto PAAR. Tegucigalpa, Honduras.

Jadin, R. C., J. H. Townsend, T. A. Castoe, and J. A. Campbell. 2012. Cryptic diversity in disjunct populations of Middle American montane pitvipers: a systematic reassessment of *Cerrophidion godmani*. Zoologica Scripta 41: 455–470.

McCranie, J. R. 2011. The Snakes of Honduras: Systematics, Distribution, and Conservation. Contributions to Herpetology, Volume 26, Society for the Study of Amphibians and Reptiles, Ithaca, New York, United States.

McCranie, J. R. 2015. A checklist of the amphibians and reptiles of Honduras, with additions, comments on taxonomy, some recent taxonomic decisions, and areas of further studies needed. Zootaxa 3: 352–386.

McCranie, J. R., L. Valdez-Orellana, and M. S. Coleman. 2013. Morphological and molecular variation in the endemic and poorly known Honduran Jumping Pitviper *Atropoides indomitus* (Serpentes: Viperidae), with notes on distribution. Herpetological Review 44: 37–40.

Medina-Flores, M., J. L. Murillo, and J. H. Townsend. 2016. *Atropoides indomitus* (Honduran Jumping Pitviper). Herpetological Review 47: 261.

Rambaut, A. 2012. FigTree version 1.4.0. (http://tree.bio.ed.ac.uk/software/figtree/; accessed 23 June 2016).

Rohland, N., and D. Reich. 2012. Cost-effective, high-throughput DNA sequencing libraries for multiplexed target capture. Genome Research 22: 939–946.

Silvestro, D., and I. Michalak. 2012. raxmlGUI: a graphical front-end for RAxML. Organisms Diversty & Evolution 12: 335–337.

Smith, E. N., and J. A. Ferrari-Castro. 2008. A new species of jumping pitviper of the genus *Atropoides* (Serpentes: Viperidae: Crotalinae) from the Sierra de Botaderos and Sierra La Muralla, Honduras. Zootaxa 1,948: 57–68.

Solís, J. M., L. D. Wilson, and J. H. Townsend. 2014. An updated list of the amphibians and reptiles of Honduras, with comments on their nomenclature. Mesoamerican Herpetology 1:123–144.

Tamura, K., G. Stecher, D. Peterson, A. Filipski, and S. Kumar. 2013. MEGA6: Molecular Evolutionary Genetic Analysis version 6.0. Molecular Biology and Evolution 30: 2,725–2,729.

Wallach, V., K. L. Williams, and J. Boundy. 2014. Snakes of the World: A Catalogue of the Living and Extinct Species. CRC Press, Taylor & Francis Group, LLC, Boca Raton, Florida, United States.

Wilson, L. D., and J. H. Townsend. 2007. The biogeography and conservation of the herpetofauna of the upland pine-oak forest of Honduras. Biota Neotropical 7: 137–148.

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