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On the taxonomy of *Oedipina stuarti* (Caudata: Plethodontidae), with description of a new species from suburban Tegucigalpa, Honduras

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Abstract. We review the taxonomy and distribution of *Oedipina stuarti* in Honduras. Based on uncertainty related to the type locality, we restrict the taxon to the holotype, which we posit originated from a mine in the northern portion of the Department of Valle, Honduras. We subsequently describe a new species of *Oedipina* from Distrito Central, Departamento de Francisco Morazán, Honduras, based on newly collected material as well as one specimen previously designated as a paratype of *O. stuarti*. The new species is differentiated from all other members of the genus by having 19 costal grooves, 20 trunk vertebrae, 27–38 maxillary teeth, and 20–24 vomerine teeth, as well as by its phylogenetic relationships. Phylogenetic analysis suggests this species to be most closely related to *O. ignea*, *O. motaguae*, and *O. stenopodia*, three other members of the subgenus *Oedipina* known to inhabit dry deciduous forest habitats in Guatemala and Honduras.

Key words. Amphibia, subgenus *Oedipina*, *Oedipina* sp. n., Francisco Morazán, Honduras, morphology.

Resumen. Revisamos la taxonomía y distribución de *Oedipina stuarti*, especie endémica de Honduras. Basados en la incertidumbre relacionada con la localidad tipo, restringimos el taxón del holotipo, lo cual postulamos su origen a partir de una mina en la parte norte del departamento de Valle, Honduras. Posteriormente Describimos una nueva especie de *Oedipina* del Distrito Central, Departamento de Francisco Morazán, Honduras, basado en el material recién colectado, así como un ejemplar previamente asignado como paratipo de *O. stuarti*. La nueva especie se diferencia de todos los demás miembros del género en tener 19 surcos costales, 20 vértebras, 27–34 dientes maxilares, y 20 dientes vomerinos, como también por sus relaciones filogenéticas. El análisis filogenético sugiere que esta especie está más estrechamente relacionada con *O. ignea*, *O. motaguae*, y *O. stenopodia*, otros tres miembros del subgénero *Oedipina*, habitantes conocidos del bosque caducifolio seco, hábitat en Guatemala y Honduras.

Introduction

Thirty-six species of Neotropical worm salamanders, genus *Oedipina* Keferstein, 1868 are currently recognized as occurring in Mesoamerica and northern South America (Frost 2015). These fossorial and semifossorial caudates are characterized by their slender, elongated bodies and long tails that can exceed twice the length of head and body in many species (Good & Wake 1993, García-París & Wake 2000). Our knowledge of these infrequently-encountered salamanders has increased dramatically in the previous five years, with one-third of all named species of *Oedipina* (12 of 36) having been described between 2006 and 2012 (Boza-Oviedo et al. 2012, Brodie et al. 2012, Köhler et al. 2007, McCranie 2006, McCranie et al. 2008, McCranie & Townsend 2011, Sunyer et al. 2010, 2011).

The monophyletic genus *Oedipina* was divided into three clade-based subgenera by García-París & Wake (2000): *Oedipina* (21 species, with 19–22 costal grooves and 20–23 trunk vertebrae; western Guatemala to Panama), *Oedopinola* (12 species, with 17–19 costal grooves and 18–19 trunk vertebrae; Chiapas, Mexico to Ecuador), and *Oeditriton* (3 species, with 19–20 costal grooves and 20–21 trunk vertebrae; Honduras and Nicaragua), with altitudinal ranges from sea level to 2,500 m above (McCranie & Townsend 2011, Sunyer et al. 2010, 2011). Ten species are presently known to occur in Honduras, including four that

Table 1. Voucher and GenBank accession numbers for samples used in this study.

Taxon	Locality	Voucher	16S	cyt b
Oedipina capitalina sp. n.	Honduras: Francisco Morazán	CM 158386	KU495731	–
		CM 158387	KU495730	
Oedipina alleni	Costa Rica: Puntarenas	MVZ 190857	AF199207	AF199149
Oedipina carablanca	Costa Rica: Limón	No voucher	FJ196862	FJ196869
Oedipina collaris	Panamá: Coclé	SIUC H 8896	FJ196863	FJ196870
Oedipina complex	Panamá: Colón	MVZ 236255	AF199213	AF199157
Oedipina cyclocauda	Costa Rica: Heredia	MVZ 138916	AF199214	AF199158
Oedipina elongata	Guatemala: Izabal	UTA A-51906	AF199216	AF199160
Oedipina gephyra	Honduras: Yoro	USNM 530582	AF199218	AF199162
		UF [JHT2443]	JN190930	JN190936
Oedipina gracilis	Costa Rica: Heredia	MVZ 210398	AF199219	–
Oedipina grandis	Costa Rica: Puntarenas	MVZ 225904	FJ196864	AF199164
Oedipina ignea	Honduras: Ocotepeque	USNM 530586	AF199231	AF199192
Oedipina kasios	Honduras: Olancho	MVZ 232825	FJ196866	FJ196872
Oedipina koehleri	Nicaragua: Atlántico Norte	UF 156456	JN190926	JN190933
Oedipina leptopoda	Honduras: Yoro	MVZ 167772	–	AF199193
Oedipina maritima	Panamá: Bocas del Toro	MVZ 219997	AF199221	AF199166
Oedipina nica	Nicaragua: Jinotega	MVZ 263774	HM068306	HM068303
Oedipina pacificensis	Costa Rica: Puntarenas	UCR 12063	AF199222	AF199169
Oedipina petiola	Honduras: Atlántida	USNM 343462	AF199217	AF199161
Oedipina poelzi	Costa Rica: Alajuela	MVZ 206398	AF199223	AF199171
Oedipina pseudouniformis	Costa Rica: Cartago	MVZ 203749	AF199227	AF199178
Oedipina quadra	Honduras: Gracias a Dios	MCZ 232824	FJ196865	FJ196871
Oedipina savagei	Costa Rica: Puntarenas	UCR 14587	AF199209	AF199152
Oedipina stenopodia	Guatemala: San Marcos	MVZ 163649	AF199228	AF199181
Oedipina taylori	Guatemala: Zacapa	USCG 1134	HM068304	HM068302
Oedipina tomasi	Honduras: Cortés	UF 150066	JN190929	JN190935
Oedipina uniformis	Costa Rica: Cartago	MVZ 203751	AF199230	AF199190

Figure 1. Dorsal view of the body and dorsal and lateral views of the head of the adult female holotype of *Oedipina stuarti* (ZMH A00871).

are assigned to the subgenus *Oedipina* (*O. ignea*, *O. leptopoda*, *O. stuarti* and *O. taylori*), four in the subgenus *Oedopinola* (*O. elongata*, *O. gephyra*, *O. petiola,* and *O. tomasi*), and two in the subgenus *Oeditriton* (*O. quadra* and *O. kasios*).

One species in Honduras has proven to be particularly enigmatic: *Oedipina stuarti* Brame, 1968. This species was described based on three specimens: two reportedly from the vicinity of Amapala on Isla del Tigre, a volcanic island in the Gulf of Fonseca; and one from the vicinity of Tegucigalpa, some 110 km to the north of Isla del Tigre. While the two paratypes (ZMH A00872 from Amapala and MNHN 1903.204 from Tegucigalpa) are in relatively poor condition, the holotype (ZMH A00871 from Amapala) is well-preserved and, among other diagnosable traits, exhibits a distinct colour pattern consisting of large blotches in the lateral and post-orbital regions of the head and pale limbs (Fig. 1). This species has not been reported from material outside of the type series, despite relatively extensive herpetofaunal sampling in Honduras over the past ~45 years (e.g., McCranie & Wilson 2002), and repeated sampling trips to Isla del Tigre by the authors and other investigators (Lovich et al. 2010, McCranie et al. 2013).

In the afternoon of 4 June 2012, we collected a single adult female *Oedipina* in the shaded yard of a homestead in Aldea Cerro Grande, a suburban community outside of the Honduran capital city, Tegucigalpa. During subsequent visits to the same house in September 2012 and June 2014, four additional specimens (two adults and two subadults) of *Oedipina* were collected from underneath a pile of broken roof tiles and other debris. Phylogenetic analysis of mtDNA data subsequently revealed the population to represent a lineage in the subgenus *Oedipina*, mostly closely related to *O. ignea* and *O. stenopodia*. Given the locality of one paratype of *O. stuarti* (MNHN 1903.204) was specified as "Tegucigalpa, elevation 975 m" by Brame (1968), we initially concluded that these specimens were representative of *O. stuarti*. However, comparisons to the morphology of the only well-preserved specimen of *O. stuarti*, the holotype, suggest that more than one taxon may be represented in these samples. The purpose of this paper is to evaluate the type specimens of *O. stuarti*, assess their taxonomic status, and describe a new species of *Oedipina*.

Materials and methods

Morphological data collection

All measurements are given in millimetres, taken to the nearest 0.1 mm with a digital calliper. Measurements taken and methods of expressing morphological characteristics follow Brame (1968). Abbreviations used are: SL (standard length, measured from tip of snout to posterior margin of vent), TL (tail length), AG (axilla-groin length), HL (head length from tip of snout to gular fold), HW (head width), ED (eye diameter), ES (eye to snout distance), CHW (chest width), HLL (hind limb length), HFW (hind foot width), CG (costal grooves), CF (costal folds), MT (maxillary teeth), and VT (vomerine teeth). An X-ray of the holotype taken with an analogue veterinary X-ray machine confirmed the number of trunk vertebrae. Maxillary and vomerine tooth row counts on both sides are summed. Comparative data are taken from Brame (1968), McCranie et al. (1993), McCranie & Wilson (2002), McCranie (2006), McCranie & Townsend (2011), Sunyer et al. (2010, 2011), and Brodie et al. (2012). Colour designations (capitalized) and codes (in parenthesis) are those of Smithe (1975–1981).

DNA extraction, amplification, and sequencing

Extraction, amplification, and sequencing were carried out at the Smithsonian Institution Laboratory of Analytical Biology (Suitland, Maryland, USA) following standardized DNA Barcode of Life (BOLD) protocols (Hebert et al. 2003, Borisenko et al. 2009). Template DNA was obtained using phenol-chloroform extraction by means of an AutoGen Geneprep 965 (AutoGen, Holiston, MA) automated DNA isolation robot, and then amplified for 16S large subunit RNA (16S) using the primers 16Sar-L and 16Sbr-H (Palumbi et al. 1991). Unincorporated nucleotides were removed from the PCR product using 2 μL of ExoSAP-IT per sample. The product was cycle-sequenced using the BigDye Terminator v3.1 Cycle Sequencing kit (ABI), purified using spin column filtration through Sephadex, and electrophoresed on an ABI 3730xl DNA Analyzer.

Phylogenetic analyses

A dataset containing representatives of available species data of *Oedipina* was generated from published data available from NCBI (http://www.ncbi.nlm.nih.gov/), and our sequence from the holotype (Table 1). Data from 16S and cytochrome b (cyt b) were included in the analysis to improve resolution in the phylogeny. Sequences were aligned using ClustalW (Thompson et al. 1994) within the software package MEGA 5.2 (Tamura et al. 2011) using the default parameters. The best-fit model of nucleotide evolution for each gene and each partition was created with the software jModeltest (Posada 2008), which uses PhyML 3.0 (Guindon & Gascuel 2003) to estimate models in a likelihood framework. The number of substitution schemes was set to three to limit the number of models tested to 24, corresponding to the number of different models that can be implemented in MrBayes 3.1.2 (Huelsenbeck & Ronquist 2001). Bayesian inference (BI) was performed using MrBayes 3.1.2 and consisted of two parallel runs of four Markov chains (three heated, one cold) run for 20×10^6 generations and sampled every 1,000 generations, with a random starting tree and the first 2×10^6 generations discarded as burn-in. Maximum likelihood analysis was conducted using the software RAxML (Stamatakis 2006), with 1,000 bootstrap replicates run on the concatenated and partitioned dataset under the GTR-GAMMA substitution model; the dataset was partitioned by gene (16S and cyt b) and codon position for cyt b.

Nomenclatural acts

The electronic edition of this article conforms to the requirements of the amended International Code of Zoological Nomenclature, and hence the new name contained herein is available under that Code from the electronic edition of this article. This published work and the nomenclatural acts it contains have been registered in ZooBank, the online registration system for the ICZN. The LSID (Life Science Identifier) for this publication is: urn:lsid:zoobank.org:pub:69ED8EEF-A3E1-4288-A1CB-27C146E5DBD6. The electronic edition of this work was published in a journal with an ISSN, and has been archived and is available from the following digital repositories: www.salamandrajournal.com.

Results

Amapala, the "El Provenor Aramecina" Mine, and the type locality of *Oedipina stuarti*

Soon after the description of *Oedipina stuarti* by Brame in 1968, Honduras became the focus of intensive herpetological investigations, spearheaded largely by the efforts of Lar-

ry David Wilson and James R. McCranie, which continue to this day. Given that the potential distribution of *O. stuarti* sensu lato is relatively wide, based on the two widely separated localities ascribed to the three type specimens, it is rather surprising that no additional specimens assignable to *O. stuarti* have been collected in over 100 years. The authors have made repeated sampling trips to Isla del Tigre, as have other investigators (Lovich et al. 2006, 2010, McCranie et al. 2013), and despite searches that often focused solely on potential habitats for *Oedipina*, no additional samples have ever been encountered. There are also no records of a mine ever existing in Amapala or anywhere else on Isla del Tigre, and long-time residents of Amapala interviewed by one of the authors (JHT), including a local historian and two school teachers, were unaware of the existence of a mine. When presented with a photograph or description, no person was able to confirm the existence of an *Oedipina* or *Oedipina*-like animal on Isla del Tigre.

The catalogue information referring to the two specimens reported to be from Amapala indicates that the holotype (ZMH A00871) was collected by passenger "F. Erbe" through an officer on the German steam-powered cargo ship S.S. Delia of the Kosmos Line. Since Amapala was the only Pacific port in Honduras in the late 1800' and early 1900', the fact that the specimen was obtained there, second hand, does not necessarily suggest that the specimen was actually collected in Amapala itself. The second specimen (ZMH A00872) is reported to have been collected "from the entrance to the mine of El Provenor Aramecina, Amapala, Isla Tigre, in the Golfo de Fonesca" (Brame 1968: 47). This locality designation contains two errors. First, "Golfo de Fonesca" should obviously read "Golfo de Fonseca." The second error obscures the exact locality; while there are no records of a mine or mining company referred to as "El Provenor Aramecina", there were mines located near the community of Aramecina, Department of Valle, during the late 1800' and early 1900' that were operated by the Aramecina Gold and Silver Mining Company, Limited (U.S. Department of Commerce and Labor 1904, 1912, Melendez 1931). A cluster of mines were operated in this area, including the "El Pórvenir" mine, located "about 12 miles north of the village of Goascorán" (Roberts & Irving 1957: 181), which closely corresponds to the location of Aramecina, and the large "Santa Lucia" mine, located approximately five kilometres east of Aramecina at approximately 365 m a.s.l. (Charles 1890). From at least 1888 through 1904, all ore mined around Aramecina was exported through the port of Amapala under the management of J. Rossner & Co., headquartered in Amapala (Melendez 1931). We conclude there is a strong likelihood that the two specimens of *O. stuarti* reported to have come from Isla el Tigre actually originated from mining areas to the east of Aramecina (13.741° N, 87.711° W, WGS 84), on the mainland of Honduras in the northern portion of the Department of Valle. Furthermore, the provenance of the second paratype, MNHN 1903.204, was questioned by McCranie & Wilson (2002: 159), who stated: "it is possible the specimen reported from Tegucigalpa, Francisco Morazán, was collected somewhere else on the Pacific versant of Honduras."

Given the absence of direct evidence, we see no clear option other than to continue to recognize the Isla del Tigre localities as the type locality of *O. stuarti* until additional material representing *O. stuarti* from either Isla del Tigre or from the vicinity of Aramecina will be secured. In either case, our discovery of an extant population of *Oedipina* from a moderate-altitude (975–1,220 m) intermontane locality in the vicinity of Tegucigalpa that is differentiated from the holotype of *O. stuarti* and isolated both geographically and ecologically from the low-altitude (near sea level to approximately 350 m above) coastal localities in Valle suggest that two taxa are involved. As a result, we present the following redefinition of *O. stuarti*, which restricts the taxon to the holotype and removes the paratype from Tegucigalpa from the definition. We introduce a new taxon, which we formally describe below, to accommodate the newly discovered population from Cerro Grande, Francisco Morazán.

Restricted definition of *Oedipina stuarti* Brame, 1968

Holotype (Fig. 1): ZMH A00871 (formerly ZSZMH 1341), an adult female, type locality and provenance (as provided by Brame 1968: 47): Amapala, Isla del Tigre, Golfo de Fonseca, Departmento de Valle, Honduras, collected by F. Erbe through the ship's officer of the German vessel S.S. Delia, Kosmos Linie, on 24 November 1899 (see discussion above).

Paratype: ZMH A00872 (formerly ZSZMH 1960), locality (as provided by Brame 1968: 47): from the entrance to the mine of El Provenor (sic, = El Porvenir) Aramecina, Amapala, Isla del Tigre, Golfo de Fonseca.

Definition: *Oedipina stuarti* is characterized based on the adult female holotype (ZMH A00871; Fig. 1) and one adult male paratype (ZMH A00872). The snout is truncate and rounded; small nostrils; canthus rostralis prominently arched; eyes are not prominent; mental gland clusters and poorly developed labial protuberances present in males; numerous pale glandular spots prominent on head, also found on the body and tail. Tail thick with a subtle basal constriction; rounded in cross-section. Presence of 19 costal grooves; adpressed limb interval 12 costal folds in male, and 12.5 in female. Limbs are diminutive with forelimb digit formula of I < IV < II < III, and I < V < IV < III for hind limbs. Interdigital fusion in forelimbs present between digits I and II, and between digits IV and III; interdigital fusion in the hind limb occurs between digits I and II, and between digits V and IV. Postiliac glands are present; males have cloacal papillae, and females have shallow cloacal folds. Premaxillary teeth protrude beyond lip in the male while they are in line with the maxillary teeth in the female; vomerine teeth present in a single row, approaching the choanae on both sides; sublingual fold present.

Diagnosis: A moderate-sized (adult female holotype = 58.6 mm SL) member of the genus *Oedipina* (subgenus *Oedipina*), based on having 19 costal grooves (all other Neotropical plethodontid genera have ≤ 13 costal grooves). *Oedipina stuarti* is distinguished from many congeners in northern Central America by having 19 costal grooves (18 in *O. elongata*, 18 in *O. gephyra,* 18 in *O. tomasi*, 21 in *O. motaguae*, 17 in *O. petiola*, and 21–22 in *O. salvadorensis*). *Oedipina stuarti* is furthermore distinguished from *O. capitalina* sp. n., *O. ignea, O. koehleri, O. motaguae*, *O. nica*, and *O. salvadorensis* by having 43–45 maxillary teeth (27–38 in *O. capitalina* sp. n., 25–40 in *O. ignea*, 36–44 in *O. koehleri*, 13–19 in *O. motaguae*, and 13 in *O. salvadorensis*), and from *O. ignea*, *O. kasios*, *O. koehleri*, *O. leptopoda*, *O. motaguae*, *O. nica*, *O. petiola*, *O. salvadorensis*, *O. stenopodia*, and *O. tzutujilorum* by having 17–19 vomerine teeth (20–24 in *O. capitalina* sp. n., 12–21 in *O. ignea*, 10–15 in *O. kasios*, 10–17 in *O. leptopoda*, 13–14 in *O. motaguae*, 9–18 in *O. nica*, 10 in *O. petiola*, 9–18 in *O. stenopodia*, 8 in *O. taylori*, and 8–13 in *O. tzutujilorum*).

Description of a new species

***Oedipina capitalina* sp. n.**
Cerro Grande worm salamander (Figs 2–5)

ZooBank LSID: urn:lsid:zoobank.org:act:638B494C-0542-49CA-B14E-6C533689A9D7

Holotype: Carnegie Museum of Natural History (CM) 158386 (Figs 2, 3), an adult male, from Aldea Cerro Grande (14°07'50" N, 87°14'28" W), 1,220 m elevation, Distrito Central, Departamento de Francisco Morazán, Honduras, collected 4 June 2012 by Rony E. Valle. Original field number JHT 3600.

Paratypes: Four; UNAH 5669, an adult female, and two subadults, UNAH 5670 (Fig. 4A) and CM 158387 (Fig. 4B), collected at the type locality on 1 September 2012 by M. R. Espinal, C. M. O'Reilly, J. M. Solis & R. E. Valle; CM 158388 (Fig. 5), an adult female, collected at the type locality on 13 June 2014 by M. R. Espinal, T. J. Firneno, Jr., J. H. Townsend & R. E. Valle.

Diagnosis: A moderate-sized (adult male holotype = 55.9 mm SL) member of the genus *Oedipina* (subgenus *Oedipina*), based on having 19 costal grooves (all other Neotropical plethodontid genera with ≤ 13 costal grooves). *Oedipina capitalina* sp. n. is distinguished from many congeners in northern Central America by having 19 costal grooves (18 in *O. elongata*, 18 in *O. gephyra,* 18 in *O. tomasi*, 21 in *O. motaguae*, 19–20 in *O. nica*, 17 in *O. petiola*, 21–22 in *O. salvadorensis*, and 20 in *O. tzutujilorum*). *Oedipina capitalina* sp. n. is furthermore distinguished from *O. ignea*, *O. koehleri, O. motaguae*, *O. nica*, *O. salvadorensis*, and *O. stuarti* by having 27–38 maxillary teeth (36–44 in *O. koehleri*, 13–19 in *O. motaguae*, 41–48 in *O. nica*, 13 in *O. salvadorensis*, and 43–45 in *O. stuarti*), and from *O. ignea*, *O. kasios*, *O. koehleri*, *O. leptopoda*, *O. motaguae*, *O. nica*, *O. petiola*, *O. salvadorensis*, *O. stenopodia*, *O. stuarti*, and *O. tzutujilorum* by having 20–24 vomerine teeth (12–21 in *O. ignea*, 10–15 in *O. kasios*, 10–17 in *O. leptopoda*, 13–14 in *O. motaguae*, 9–18 in *O. nica*, 10 in *O. petiola*, 9–18 in *O. stenopodia*, 17–19 in *O. stuarti*, 8 in *O. taylori*, and 8–13 in *O. tzutujilorum*). It is furthermore distinguished from *O. stuarti* by lacking prominent, symmetrical, pale, glandular spots on the head and extending to the tail (present in *O. stuarti*) and by having dark pigmentation on the distal portions of all four limbs (*O. stuarti* lacking dark coloration on the lower two-thirds of limbs). *Oedipina capitalina* sp. n. is differentiated from members of the subgenus *Oedopinola* by having 27–38 maxillary teeth (absent in *O. elongata*, 43–54 in *O. gephyra*, 48 in *O. tomasi*).

Description of holotype: Adult male (SL 55.9 mm) of the genus *Oedipina*, subgenus *Oedipina*, as identified phyloge-

Figure 2. Adult male holotype of *Oedipina capitalina* sp. n. (CM 158386). Photo by MRE.

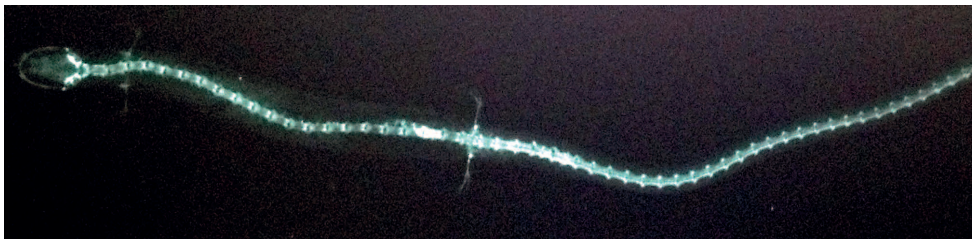

Figure 3. Radiograph of the holotype of *Oedipina capitalina* sp. n. (CM 158386).

Figure 4. Juvenile paratypes of *Oedipina capitalina* sp. n.; A) UNAH 5670. B) CM 158387. Photos by MRE.

netically (Fig. 6). Head small, truncated in dorsal profile, rounded in lateral profile; nostrils small, situated near tip on snout, distinct nasolabial groove extending from lower posterior margin of each nostril to lip; labial protuberances present, swollen; canthus rostralis rounded; eyes not protuberant, not visible beyond margin of jaw when viewed from below; 1 enlarged, recurved pre-maxillary tooth protruding through upper lip, 20 vomerine teeth, and 34 maxillary teeth; body long and slender, SL/AG 1.47; 19 costal grooves per side; 20 trunk vertebrae (18 bearing ribs; Fig. 4); 46 caudal vertebrae; SL/TL 0.69; tail rounded at the base, laterally somewhat compressed for posterior half of its length, barely constricted at base; postiliac gland not prominent; limbs short, limb interval 12.5 costal grooves; SL/HW 13.6 SL/HLL 11.2; SL/HFW 46.9; digits I–II on hind limbs fused; digits on forelimbs in order of decreasing length: III > I > IV > I, hind limbs: III > IV > II > V > I; forelimb digits I–II and III–IV fused.

Measurements (in mm) of holotype: Snout to posterior angle of vent (SL) 55.9; snout to anterior angle of vent 53.5; tail width 3.4; tail depth 3.1; head length 7.6; head width 4.1; tail length 80.2; trunk width 5.7; hind limb length 6.8; front limb length 5.8; hind foot width 1.2; eyelid length 1.5; eyelid width 0.9; interorbital distance 1.9; anterior rim of orbit to snout distance 1.8; distance separating internal nares 1.2; distance separating external nares 2.1; snout projection beyond mandible 0.4; distance from axilla to groin 37.8.

Figure 5. Adult female paratype of *Oedipina capitalina* sp. n. (CM 158388). Photo by MWI.

Coloration of holotype in life: Head and limbs Hazel (35), trunk and tail Dark Grayish Brown (20), with tiny white and blue iridophores present on all surfaces, being more numerous on the dorsal surface of the head, body, and tail.

Variation: The four paratypes (two adult females, UNAH 5669 and CM 158388, and two subadults, UNAH 5670 and CM 158387) are similar to the holotype in body shape and coloration, and all four specimens have 19 costal grooves per side. Snout to posterior angle of vent (SL) ranges from 39.1 to 53.9; snout to anterior angle of vent from 37.5 to 51.9. In all paratypes, the tail is wider than deep immediately posterior to the vent (tail width/tail depth = 1.09–1.14), and the width of the body is approximately 10% of the standard length (trunk width/SL = 0.102–0.106). One adult female paratype (CM 158388) has 38 maxillary teeth, and two subadult paratypes (CM 158387 and UNAH 5670) have 27 and 23 maxillary teeth, respectively.

Phylogenetic relationships: *Oedipina capitalina* sp. n. forms a clade with three other species of the subgenus *Oedipina* that inhabit subhumid areas of southwestern Honduras and eastern Guatemala: *O. ignea*, and *O. taylori* (Fig. 6). The relationships between these four taxa remain unresolved; both analyses recovered a polytomy consisting of *O. capitalina* sp. n., *O. ignea*, and *O. stenopodia*, with *O. taylori* as the sister species to the polytomy (Fig. 6). Estimates of the phylogenetic relationships between these species should be considered preliminary; *O. capitalina* sp. n. was represented in the analyses by a single sample sequenced for 16S (repeated attempts to amplify the degraded sample for both cyt b and COI failed), and the entire dataset is limited to a total of 875 bp of sequence data (490 bp for 16S, 385 bp for cyt b).

Distribution and natural history: *O. capitalina* sp. n. is known only from type locality, a suburban homestead yard adjacent to a heavily degraded headwater stream near the top of Cerro Grande in the central portion of the Departamento de Francisco Morazán (Fig. 7). This locality lies in the upper portion of the Choluteca Valley on the northern side of Tegucigalpa at 1,220 m a.s.l.. This denuded area lies within the Premontane Dry Forest formation (Holdridge 1967, Townsend & Wilson 2010) and likely supported both dry forest and pine-oak forest habitat prior to its being denuded. Specimens were collected during the day in June and September from underneath rotten logs and dead vegetation.

Etymology: The specific name "*capitalina*" is a Honduran colloquialism that refers to a female inhabitant of the capital city of Tegucigalpa. This name is given in reference to

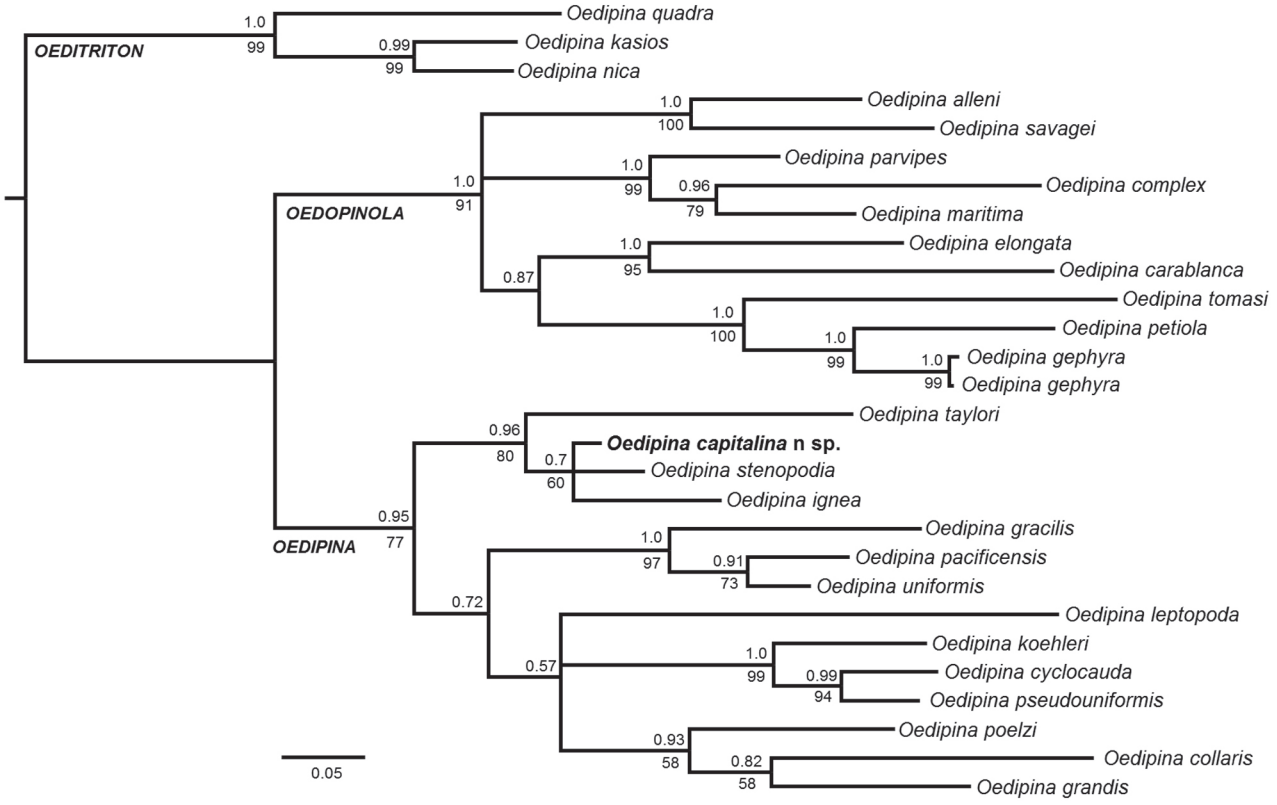

Figure 6. Bayesian phylogram showing relationships within the genus *Oedipina* and the phylogenetic position of *Oedipina capitalina* sp. n.; posterior probability scores shown above the branch, maximum likelihood bootstrap scores from a complimentary analysis shown below the branch.

Figure 7. The type locality of *Oedipina capitalina* sp. n., a suburban homestead yard containing a denuded headwater stream in the Cerro Grande, north of Tegucigalpa, Honduras. The type series was collected in the yard to the left side of this picture between the stream and a house (not shown). Photo by JHT.

the type locality's proximity to the largest city in the country and is used as a noun in apposition.

Discussion

Based on the works of McCranie et al. (2008), Sunyer et al. (2011), and Brodie et al. (2012), we recognize nine species of the subgenus *Oedipina* inhabiting the Chortís Block region of eastern Nuclear Central America (sensu Townsend 2011): *O. capitalina* sp. n., *O. chortiorum*, *O. ignea*, *O. koehleri*, *O. leptopoda*, *O. motaguae*, *O. stuarti*, *O. stenopodia,* and *O. taylori*. Despite the recent aforementioned attention to this group, the taxonomic status of *Oedipina* populations from the Lenca Highlands region of Honduras (departments of Copán, Intibucá, La Paz, Lempira, and Ocotepeque) and adjacent Guatemala and El Salvador remains largely unresolved. Brodie et al. (2012) recently described three new species of *Oedipina* from Guatemala: *O. chortiorum*, *O. motaguae*, and *O. tzutujilorum*. Brodie et al. (2012: 239) also recognized *O. salvadorensis* Rand (1952), previously considered a junior synonym of *O. taylori* (Stuart 1952), as a valid species based on the presence of maxillary teeth (absent in the type series of *O. taylori*), fewer intercostal folds between adpressed limbs, larger eyes, and a smaller postiliac gland.

The confusion surrounding the taxonomic assignments of *Oedipina* from the Lenca Highlands began with the descriptions of *O. ignea*, *O. salvadorensis*, and *O. taylori*, which were published almost simultaneously in 1952 (Rand 1952, Stuart 1952; see Brodie et al. 2012: 239 for a summary). McCranie & Wilson (2002: 156–157) consider 23 specimens from four localities in the Lenca Highlands of Honduras to represent *O. ignea*. However, none of these populations, nor those from the type locality of *O. ignea* in Depto. Chimaltenango, Guatemala, have been characterized phylogenetically. Furthermore, samples representative of any of the three taxa described by Brodie et al. (2012), *O. salvadorensis*, or *O. taylori* have not been included in phylogenetic hypotheses for the genus, leaving our understanding of diversification among *Oedipina* in the region largely incomplete. The necessity for additional sampling is further emphasized by the discovery of *O. capitalina* sp. n. in an urbanized, disturbed forest. Given the inherent difficulties in sampling these cryptozoic salamanders, only prolonged focused efforts are likely to produce the material needed to resolve the relationships and taxonomy within the *O. stenopodia* subclade (sensu McCranie et al. 2008).

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