



## Three new endemic species of *Epictia* Gray, 1845 (Serpentes: Leptotyphlopidae) from the dry forest of northwestern Peru

CLAUDIA KOCH<sup>1,4</sup>, PABLO J. VENEGAS<sup>2,3</sup> & WOLFGANG BÖHME<sup>1</sup>

<sup>1</sup>Zoologisches Forschungsmuseum Alexander Koenig (ZFMK), Adenauerallee 160, 53113 Bonn, Germany

<sup>2</sup>Centro de Ornitología y Biodiversidad (CORBIDI), Santa Rita 117, Huertos de San Antonio, Surco, Lima, Perú

<sup>3</sup>Museo de Zoología, Escuela de Ciencias Biológicas, Pontificia Universidad Católica del Ecuador, Avenida 12 de Octubre 1076 y Roca, Apartado 17-01-2184, Quito, Ecuador

<sup>4</sup>Corresponding author. E-mail: [c.koch@zfmk.de](mailto:c.koch@zfmk.de)

### Abstract

Three new blind snake species of the genus *Epictia* are described based on material collected in the Peruvian Regions Amazonas, Cajamarca and La Libertad. All three species are well differentiated from all congeners based on characteristics of their morphology and coloration. They share 10 scale rows around the middle of the tail and possess two supralabials with the anterior one in broad contact with the supraocular. *Epictia septemlineata* sp. nov. has 16 subcaudal scales, 257 mid-dorsal scale rows, a yellowish-white rostral, and a black terminal spine. *Epictia vanwallachi* sp. nov. exhibits 16 subcaudals, 188 mid-dorsal scale rows, a grayish-brown rostral, and a yellow terminal spine. *Epictia antoniogarciai* sp. nov. features 14–18 subcaudals, 195–208 mid-dorsal scale rows, a bright yellow or yellowish-white rostral, and the terminal spine and terminal portion of the tail yellow. All three species were collected in the interandean dry forest valleys of the Marañón River and its tributaries. This region is an area of endemism and warrants further attention from systematic and conservation biologists.

**Key words:** Andes, Blind snake, fossorial snake, slender blind snakes, thread snakes, burrowing snake, dry forest, Epictini, *Leptotyphlops*, Marañón valley, Reptilia, Squamata

### Introduction

The blind snake family Leptotyphlopidae Stejneger, 1892 consists of 117 fossorial species with vestigial eyes that spend most of their time buried in loose soil, or under stones or logs, making their detection in the field difficult. According to a molecular phylogeny of this family (Adalsteinsson *et al.* 2009), two subfamilies are currently recognized (Leptotyphlopinae Stejneger, 1892 and Epictinae Hedges, Adalsteinsson, & Branch, 2009), of which only the Epictinae occur in South America. Adalsteinsson *et al.* (2009) further recognize two tribes (Epictini Hedges, Adalsteinsson, & Branch, 2009 and Rhinoleptini Hedges, Adalsteinsson, & Branch, 2009) and eight genera (*Epictia* Gray, 1845, *Guinea* Hedges, Adalsteinsson, & Branch, 2009, *Mitophis* Hedges, Adalsteinsson, & Branch, 2009, *Rena* Baird & Girard, 1853, *Rhinoleptus* Orejas-Miranda, Roux-Estève & Guibé, 1970, *Siagonodon* Peters, 1881, *Tetracheilostoma* Jan, 1861, and *Tricheilostoma* Jan, 1860) within the subfamily Epictinae. Within the type genus *Epictia* of the Neotropical tribe Epictini they further recognize 25 species. Arredondo & Zaher (2010) described *Epictia clinorostris* from Central Brazil, and Franco & Pinto (2009) consider *Stenostoma* [*Epictia*] *albifrons* Wagler, 1824 as a nomen dubium due to the loss of the holotype and the lack of diagnostic characters for the species. Thus 25 species are currently recognized to belong to this genus and 13 of these are known from Peru: *Epictia albipuncta* (Burmeister, 1861), *E. alfredschmidti* (Lehr, Wallach, Köhler & Aguilar, 2002), *E. diaplocia* (Orejas-Miranda, 1969), *E. melanura* (Schmidt & Walker, 1943), *E. peruviana* (Orejas-Miranda, 1969), *E. rubrolineata* (Werner, 1901), *E. rufidorsa* (Taylor, 1940), *E. striatula* (Smith & Laufe, 1945), *E. subcrotilla* (Klauber, 1939), *E. teaguei* (Orejas-Miranda, 1964), *E. tenella* (Klauber, 1939), *E. tessellata* (Tschudi, 1845), and *E. tricolor* (Orejas-Miranda & Zug, 1974). Little is known about the Peruvian species of the genus

*Epictia* and for most taxa only very few localities are known and only few specimens are available in museum collections. Live colorations of many species are unknown and photos of Peruvian specimens are also rare. Knowledge of intraspecific variation is insufficient in many species, exacerbating the taxonomy of this group.

Several field trips were conducted to the inter-andean dry forest valleys of the Marañón River and its tributaries. The surveyed area is located in the Central Andes in the Northern Peruvian Regions of Amazonas, Cajamarca, and La Libertad and is bordered by the Cordillera Occidental to the west, and the Cordillera Central to the east. This Andean dry forest shelters a large number of endemic species (Statterfield *et al.* 1998; Bridgewater *et al.* 2003; Venegas *et al.* 2008; Särkinen *et al.* 2011; Koch *et al.* 2006, 2011, 2013) with many species being only recently described. During the fieldwork five species of blind snakes of the family Leptotyphlopidae were discovered. Because of their scale counts and the large anterior supralabials, the discovered species belong to the genus *Epictia* (Adalsteinsson *et al.* 2009). They can further be assigned to the *tesselata* species group (Orejas-Miranda 1964) by sharing 10 scale rows around the middle of the tail and by having 2 supralabials with the anterior one in broad contact with the supraocular. Nonetheless, the species could not be assigned to any of the known species of the genus. Herein a detailed description of three of the new species is given. The two remaining new species will be described elsewhere.

## Material and methods

Fieldwork was conducted between May 2008 and November 2010. A total of 20 specimens belonging to the genus *Epictia* were collected. After tissue samples were taken, the specimens were fixed over 12–24 h in 10% formalin, subsequently stored in 70% ethanol and finally deposited in the collections of the Centro de Ornitología y Biodiversidad, Lima, Peru (CORBIDI), and the Zoologisches Forschungsmuseum Alexander Koenig, Bonn, Germany (ZFMK).

Additionally, 59 specimens (see Appendix) belonging to 16 species from the tribe Epictini were reviewed for comparative data from the collections of the Natural History Museum, University of Kansas, Lawrence, USA (KU), the Natural History Museum, London, UK (BM), the Museum of Comparative Zoology, Cambridge, USA (MCZ), the Field Museum of Natural History, Chicago, USA (FMNH), CORBIDI, and the ZFMK.

Further, comparative data for other *Epictia* species were taken from Schlegel (1839), Werner (1901), Klauber (1939), Taylor (1940), Schmidt & Walker (1943), Smith & Laufe (1945), Orejas-Miranda (1961, 1964, 1969), Freiberg & Orejas-Miranda (1968), Peters & Orejas-Miranda (1970), Orejas-Miranda & Zug (1974), Hoogmoed (1977), Zug (1977), Laurent (1984), Vanzolini (1996), Lehr *et al.* (2002), Kretzschmar (2006), Börschig (2007), Arredondo & Zaher (2010), Pinto *et al.* (2010), and Francisco *et al.* (2012). Measurements of head, body and tail were taken with a common ruler, rounded to the nearest 1 mm, or with a digital calliper, rounded to the nearest 0.1 mm. The following abbreviations were used: snout–vent length (SVL, from tip of snout to cloaca); tail length (TAL); total length (TL); head width (HW, across supraoculars); head height (HH, at highest point); head length (HL); distance from tip of snout to nostril (DSN); distance from nostril to anterior margin of eye (DNE); eye diameter (ED); midbody diameter (MB); midtail diameter (MT); mid-dorsal scale rows (MDS, counted from between the rostral scale and terminal spine); number of ventral scales (V, counted in longitudinal row from mental to anal plate); number of scales around the body (D, counted at three different points along the body): (1) at a head's length behind the head; (2) at midbody; (3) at a head's length before the cloaca); number of subcaudal scales (SC, counted in longitudinal row from cloaca to tip of tail); number of midtail scale rows (TS, counted transversely across the middle of the tail); number of supralabials (SL); number of infralabials (IF).

Terminology for morphometric and meristic characters follows Wallach (2003) and Broadley & Wallach (2007). The collection of morphometric and meristic characters follows Broadley & Wallach (2007), Arredondo & Zaher (2010), and Francisco *et al.* (2012).

Based on the fact that only a single specimen was collected of each of the first two species described herein, it was decided to not dissect them (looking for hemipenes, testicles or ovaries) to determine its sex.

Altitudes above sea level and geographic coordinates were recorded with a GPS (Garmin GPSMap 60CSx) using the geodetic datum WGS84. Humidity and air and soil temperatures were taken with a digital thermo-hygrometer (Extech) with an external sensor.

## Results

As mentioned already in the introduction the three new species share 10 scale rows around the middle of the tail and can thus be differentiated from *Epictia albipuncta* and *E. striatula*, both of which have 12 scale rows around the middle of the tail. By having 2 supralabials with the anterior one in broad contact with the supraocular they can further be differentiated from *E. albipuncta*, *E. australis*, *E. borapeliotes*, *E. clinorostris*, *E. collaris*, *E. columbi*, *E. diaplocia*, *E. goudotii*, *E. magnamaculata*, *E. munoai*, *E. peruviana*, *E. signata*, *E. striatula*, *E. subcrotilla*, *E. vellardi* (all not in contact) and from *E. nasalis* (lacking supraoculars).

## Description of the new species

### *Epictia septemlineata* sp. nov.

(Figures 1, 2 A–C)

**Holotype:** CORBIDI 14683, from Limon Village, Celendín Province, Cajamarca Region, Peru (S 06°52'34.2", W 078°05'10.5", 2053 m.a.s.l.), collected by A. Garcia Bravo and C. Koch on 28 April 2009.

**Diagnosis.** (1) 14 midbody scale rows; (2) 10 midtail scale rows; (3) 2 supralabials, first large and in broad contact with supraocular; (4) 16 subcaudals; (5) 257 mid-dorsal scale rows; (6) Dorsum with seven black longitudinal stripes, outermost interspaces bright yellow along the body, medial interspaces yellow near the head and tail, and midbody interspaces reddish-brown; (7) rostral yellowish-white dorsally and cream ventrally; (8) terminal spine black; (9) ventral surface of head and body cream except for a soft dark longitudinal dotted line running along the center of each ventral scale row, anal plate cream with two lateral irregular dark blotches, and ventral surface of the tail cream, with three longitudinal rows of dark spots that merge distally and form a large irregular triangle.

**Comparisons** [conditions for other *Epictia* in brackets]: By having 257 mid-dorsal scales this species has a higher number than *E. peruviana* [185–199], *E. collaris* [155–166], *E. diaplocia* [205–233] and *E. munoai* [184–230], and a lower number than *E. alfredschmidti* [267–279], *E. subcrotilla* [318–333], *E. melanura* [395–396], and *E. tricolor* [285–310]. By having 16 subcaudal scales it further differs from *E. columbi* [22–25], *E. melanura* [18–20], *E. munoai* [10–14], *E. nasalis* [21] and *E. tricolor* [18–23]. By having a tricolor pattern of dorsal longitudinal stripes (reddish-brown, black and yellow) it differs from all members of the *tesselata* group except for *E. alfredschmidti*, *E. teaguei* and *E. tricolor*. By lacking a yellow terminal spine this species differs from *E. alfredschmidti*, *E. australis*, *E. borapeliotes*, *E. clinorostris*, *E. collaris*, *E. diaplocia*, *E. goudotii*, *E. magnamaculata*, *E. nasalis*, *E. peruviana*, *E. rubrolineata*, *E. signata*, *E. striatula*, *E. subcrotilla*, *E. teaguei*, *E. tenella*, *E. tesselata*, *E. tricolor*, *E. undecimstriata* and *E. vellardi*.

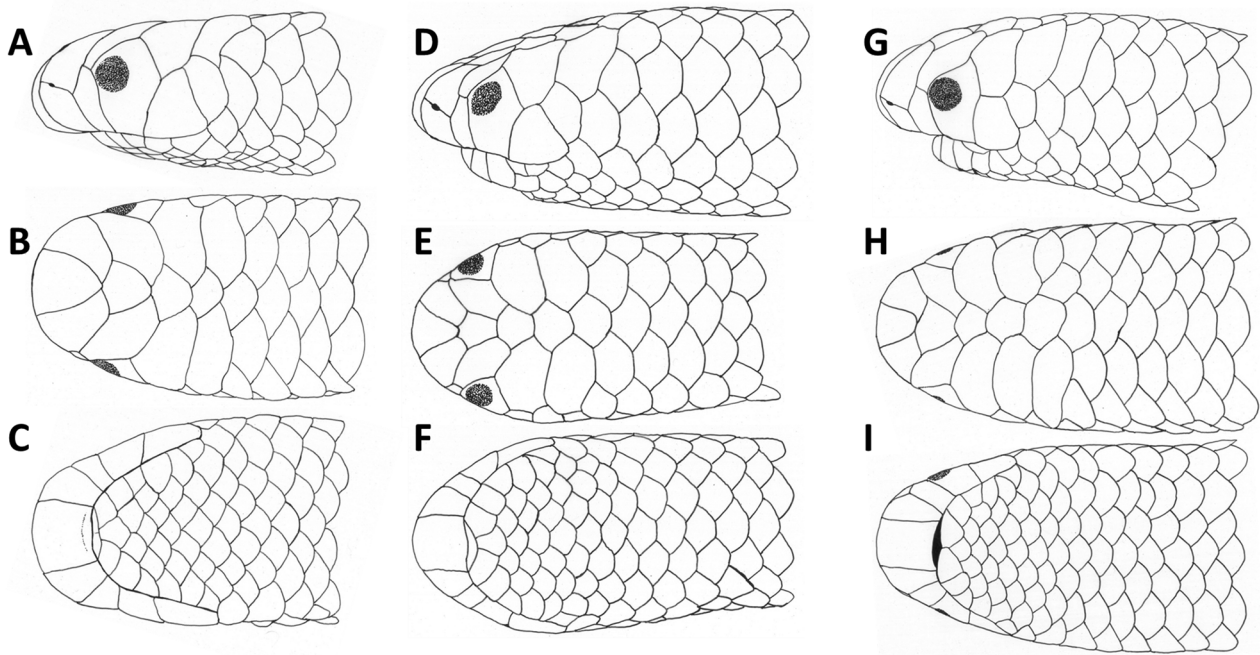
**Description of holotype:** An adult specimen with SVL of 172 mm; TAL of 9 mm; MB of 3.7 mm; MT of 3 mm; TL/TAL of 20.1; TL/MB of 48.9; HW of 3.1 mm; HH of 2.1 mm; HL of 4.1 mm; DSN of 1.2 mm; DNE of 0.8 mm; ED of 0.5 mm. Head subcylindrical, slightly depressed dorsoventrally, indistinguishable from neck; body cylindrical; slightly tapered cranially and caudally. Snout rounded in lateral view, slightly angled in ventral view. Rostral visible in dorsal view, about twice as long as wide, rectangular ventrally, triangular dorsally with dorsal termination (apex) acute, reaching the imaginary transverse line between the anterior borders of the eyes, contacting upper and lower nasal laterally and frontal dorsally.

Nasal completely divided horizontally by oblique suture, reaching rostral and first supralabial; ovoid nostril located in the center of the suture and having the major axis oriented along the suture; supranasal about twice as high as wide and about twice higher than infranasal, contacting infranasal ventrally, first supralabial and supraocular posteriorly, and frontal dorsally; infranasal slightly higher than wide, about 1.5 times wider than anterior supralabial, contacting first supralabial posteriorly; two supralabial scales, first positioned anteriorly and second posteriorly to ocular scale (1+1); upper lip border formed by rostral, infranasal, anterior supralabial, ocular and posterior supralabial; first supralabial three times higher than wide, exceeding nostril, slightly exceeding central level of eye, in contact with supraocular scale dorsally and ocular posteriorly; ocular scale pentagonal with dorsal apex acuminate, 1.5 times higher than wide, contacting supraocular anterodorsally, parietal posterodorsally and second supralabial posteriorly; eye located at level of maximum width of ocular and almost at nostril level,

positioned anteriorly without contacting scale sutures; eyes placed laterally, but partly visible in dorsal view; second supralabial subtrapezoidal, about as wide as high, reaching central level of eye and almost as high as anterior supralabial, 2.5 times wider than anterior supralabial at widest point; posterior margin of second supralabial in broad contact with temporal and in small contact with first ventrolateral scale; dorsal margin of second supralabial in contact with parietal; temporal scale of same size as dorsal scales of lateral rows; supraocular scale almost spindle-shaped, oriented oblique, three times longer than wide, contacting parietal posteriorly, and frontal and postfrontal dorsally; supraocular, parietal and occipital scales visible in lateral view; mid-dorsal head plates (frontal, postfrontal, interparietal and interoccipital) imbricate, slightly decreasing in size posteriorly, subcircular in dorsal view, except for ellipsoid interoccipital, less wider than posterior mid-dorsal scales; frontal contacting postfrontal posteriorly; postfrontal contacting supraoculars anteriorly, parietals and interparietal posteriorly; interparietal contacting parietals and occipitals laterally, and interoccipital posteriorly; interoccipital contacting occipitals laterally, and nuchal and first pair of paravertebral dorsal scales posteriorly; parietal almost 2.5 times higher than wide, marginally larger than occipital, both almost rectangular, oriented slightly oblique; lower margin of parietal contacting upper border of temporal, posterior margin in broad contact with occipital; lower margin of occipital contacting temporal and first lateral body scale, posterior margin in broad contact with first paravertebral and first dorsolateral body scales; six infralabials per side, slightly subequal in size; mental scale with the same width at lip border as rostral; first pair of infralabials with exactly the same width at lip border as lower nasal; dorsal and lateral head scales porous.



**FIGURE 1.** Holotype of *Epictia septemlineata* sp. nov. in life (CORBIDI 14683). Dorsal view (A); Detail of dorsal aspect of head (B); Detail of ventral aspect of tail and lower body (C).



**FIGURE 2.** Lateral (A), dorsal (B) and ventral (C) views of head of Holotype of *Epictia septemlineata* sp. nov. (CORBIDI 14683); Lateral (D), dorsal (E) and ventral (F) views of head of Holotype of *Epictia vanwallachi* sp. nov. (CORBIDI 14682); Lateral (G), dorsal (H) and ventral (I) views of head of Paratype of *Epictia antoniogarciai* sp. nov. (ZFMK 90934).

Dorsal scales imbricate, smooth, homogeneous, cycloid in shape, almost twice as wide as long; 257 MDS; 14–14 D; 241 V; 10 TS; Anal plate large, almost twice as wide as long, triangular in shape with distal apex rounded, bordered anteriorly and posteriorly by three rows of scales; 16 SC, becoming slightly smaller distally; each of last four scales on the dorsal surface of the tail fused with adjacent dorsolateral scales; terminal spine conical, with stout base slightly wider than long.

**Color of holotype in life:** Rostral scale and infranasals yellowish-white dorsally and cream ventrally; dorsal head scales mostly blackish, except for thin indistinct white margins in the mid-dorsal head plates (frontal, postfrontal, interparietal and interoccipital); whitish lateral stripe covering entire infranasal, and lower parts of supralabials and ocular, dorsal part of supralabials and ocular blackish; dorsum with seven black longitudinal stripes, which run along the middle of each dorsal scale row; vertebral stripe slightly thicker than paravertebral stripes; outermost interspaces bright yellow, medial interspaces yellow near the head and tail, fading into reddish-brown at midbody; terminal spine black; ventral surface of head, body and tail cream except for a soft dark longitudinal dotted line running along the middle of each ventral scale row, outermost thickest, two dark indistinct blotches on the anal plate, three longitudinal rows of dark indistinct blotches on the subcaudals, and a triangle-shaped blotch formed by the fusion of the three longitudinal rows in the distal portion of the ventral surface of the tail, with the apex oriented caudally.

**Color of holotype in preservative:** The pattern of longitudinal black stripes and other dark markings on the body remains unchanged, likewise the dark coloration of the head scales; the yellowish-white dot on rostral and infranasals changed to whitish cream; the yellow interspaces changed to cream, and the reddish-brown interspaces changed to sandy brown.

**Etymology.** The specific name is derived from the Latin *septem* = seven and *lineata* = striped and refers to the diagnostic pattern of seven longitudinal black stripes on the dorsum.

**Distribution and natural history:** So far only known from the type locality in the interandean part of the Equatorial Dry Forest (Figs. 3 and 8).

The single specimen was collected on the end of April 2009 at 5:30 pm under a stone on soft soil of a recently tilled grainfield (Fig. 3). Temperature on the soil under the stone was 25.9°C, air temperature was 23°C and air humidity was 57%.



**FIGURE 3.** Type locality and habitat of *Epictia septemlineata* **sp. nov.** (CORBIDI 14683); village of Limon, Celendín Province, Cajamarca Region, Peru (A), grainfield where the holotype was found (B).

***Epictia vanwallachi* sp. nov.**

(Figures 2 D–F, 4)

**Holotype:** CORBIDI 14682, from Vijus Village, Pataz Province, La Libertad Region, Peru (S 07°43'11.6", W 077°39'51.1", 1290 m.a.s.l.), collected by E. Hoyas Granda, A. Beraún and C. Koch on 10 January 2010.

**Diagnosis.** (1) 14 midbody scale rows; (2) 10 midtail scale rows; (3) 2 supralabials, first large and in broad contact with supraocular; (4) 16 subcaudals; (5) 188 mid-dorsal scale rows; (6) dorsal scales of head, body and tail brown with thin white or yellowish margins; (7) rostral uniformly grayish-brown; (8) terminal spine dorsally and ventrally and last three subcaudals yellow; (9) ventral scales of head, body and tail grayish-brown with creamish-white margins.

**Comparisons** [conditions for other *Epictia* in brackets]: By having 188 mid-dorsal scales, the new species has a higher number than *E. collaris* [155–166] and a lower number than *E. albipuncta* [213–285], *E. alfredschmidti*

[267–279], *E. borapeliotes* [256–282], *E. columbi* [240–265], *E. diaplocia* [205–233], *E. subcrotilla* [318–333], *E. melanura* [395–396], *E. rufidorsa* [255–270], *E. septemlineata* [257], *E. striatula* [216–265], *E. teaguei* [232–259], *E. tenella* [198–299], *E. tessellata* [258–283] and *E. tricolor* [285–310]. By having 16 subcaudal scales it further differs from *E. columbi* [22–25], *E. melanura* [18–20], *E. munoai* [10–14], *E. nasalis* [21] and *E. tricolor* [18–23]. By lacking a yellow dorsal blotch on the anterior region of the head this species differs from *Epictia septemlineata*, *E. alfredschmidti*, *E. borapeliotes*, *E. clinorostris*, *E. collaris*, *E. diaplocia*, *E. goudotii*, *E. magnamaculata*, *E. nasalis*, *E. peruviana*, *E. rubrolineata*, *E. signata*, *E. striatula*, *E. subcrotilla*, *E. teaguei*, *E. tenella*, *E. tessellata*, *E. tricolor*, *E. undecimstriata* and *E. vellardi*. It further differs from *E. septemlineata* [dorsum with seven black longitudinal stripes] and *E. rubrolineata* [dorsum red with 5 longitudinal black stripes] by having a color pattern with grayish-brown dorsal scales with thin white or yellowish margins.



**FIGURE 4.** Holotype of *Epictia vanwallachi* sp. nov. (CORBIDI 14682). Dorsal view in life (A); Detail of dorsal aspect of head and tail in life (B); Detail of ventral aspect of tail in preservative (C).

**Description of holotype:** An adult specimen with SVL of 99 mm; TAL of 8.1 mm; MB of 2.9 mm; MT of 2.2 mm; TL/TAL of 13.2; TL/MB of 36.9; HW of 2.6 mm; HH of 1.7 mm; HL of 2.6 mm; DSN of 0.8 mm; DNE of 0.6 mm; ED of 0.4 mm. Head subcylindrical, slightly depressed dorsoventrally, hardly distinguishable from neck; body cylindrical; slightly tapered cranially and caudally. Snout slightly sloped in lateral view, rounded in ventral view. Rostral visible in dorsal view, about 1.4 times longer than wide, almost squared ventrally, triangular dorsally with dorsal termination (apex) acute, almost reaching the imaginary transverse line between the anterior borders of eyes, contacting upper and lower nasal laterally and frontal dorsally.

Nasal completely divided horizontally by a suture slightly oblique, reaching rostral and first supralabial;

ellipsoid nostril located in the center of the suture and having the major axis oriented along the suture; supranasal about 1.5 times higher than wide and about 1.3 times higher than infranasal, contacting infranasal ventrally, first supralabial and supraocular posteriorly, and frontal dorsally; infranasal slightly higher than wide, about 1.7 times wider than anterior supralabial, contacting first supralabial posteriorly; two supralabial scales, first positioned anteriorly and second posteriorly to ocular scale (1+1); upper lip border formed by rostral, infranasal, anterior supralabial, ocular and posterior supralabial; first supralabial about three times higher than wide, exceeding nostril, almost reaching central level of eye, in contact with supraocular scale dorsally and ocular posteriorly; ocular scale pentagonal with dorsal apex acuminate, 1.4 times higher than wide, contacting supraocular anterodorsally, parietal posterodorsally and second supralabial posteriorly; eye located slightly above level of maximum width of ocular and with lower eye margin at nostril level, positioned anteriorly without contacting scale sutures; eyes entirely visible in dorsal view; second supralabial triangular, about as wide as high, reaching central level of eye, as high as anterior supralabial, 3.3 times wider than anterior supralabial at widest point; posterior margin of second supralabial in broad contact with temporal and in contact with first ventrolateral scale; dorsal margin of second supralabial in contact with parietal; temporal scale of same size as dorsal scales of lateral rows; supraocular scale almost spindle-shaped, oriented oblique, 2.5 times longer than wide, contacting parietal posteriorly, and frontal and postfrontal dorsally; supraocular, parietal and occipital scales visible in lateral view; mid-dorsal head plates (frontal, postfrontal, interparietal and interoccipital) only marginally imbricate, not decreasing in size posteriorly, hexagonal in dorsal view, except for pentagonal frontal, slightly higher but of same width than posterior mid-dorsal scales; frontal contacting postfrontal posteriorly; postfrontal contacting supraoculars anteriorly, parietals and interparietal posteriorly; interparietal contacting parietals and occipitals laterally, and interoccipital posteriorly; interoccipital contacting occipitals laterally, and nuchal and first pair of paravertebral dorsal scales posteriorly; parietal about 2.4 times higher than wide, marginally larger than occipital, both almost ovoid, oriented slightly oblique; lower margin of parietal contacting upper border temporal, posterior margin in broad contact with occipital; lower margin of occipital contacting temporal and first lateral body scale, posterior margin in broad contact with first paravertebral and first dorsolateral body scales; six infralabials per side, subequal in size; mental scale bell-shaped, excluded from infralabial border by the first two pairs of infralabial scales; first pair of infralabials triangular, distinctly larger than other infralabials; chin, gular, and dorsal and lateral head scales porous.

Dorsal scales slightly imbricate, smooth, homogeneous, rhomboid in shape, about 1.6 times wider than long; 188 MDS; 14–14–14 D; 171 V; 10 TS; Anal plate large, twice as wide as long, almost triangular in shape, bordered anteriorly and posteriorly by five rows of scales; 16 SC, becoming smaller distally; each of last four scales on the dorsal surface of the tail fused with adjacent dorsolateral scales; terminal spine conical and strongly pointed, with stout base about as wide as long.

**Color of holotype in life:** Rostral uniformly grayish-brown; dorsal scales from head, body, and tail brown; ventral scales from head, body and tail grayish-brown; both dorsal and ventral scales of head body and tail with thin creamish-white margins; terminal spine and last three subcaudals yellow, strongly mottled with brown dorsally and ventrally.

**Color of holotype in preservative:** Rostral gray; dorsal scales from head and body brown with cream margins, yellow regions of terminal portion of tail changed to whitish cream; ventral surface of head, body and tail changed to sandy brown with cream margins.

**Etymology.** This species name is a patronym for Van Wallach, American herpetologist, in recognition of his outstanding contributions towards systematics of the snake family Leptotyphlopidae.

**Distribution and natural history.** *Epictia vanwallachi* is only known from the type locality in the interandean part of the Equatorial Dry Forest (Figs. 5 and 8).

The specimen was collected under a stone on 10 January 2010 at 9:55 pm, with air temperature of 25.8°C and air humidity of 60%.

**Remarks.** This species does not have striped pattern and multiple colors as mentioned by Adalsteinsson et al. (2009) as diagnostic characters for the genus *Epictia*, but it shares all other diagnostic characters with its congeners.





**FIGURE 5.** Habitat of *Epictia vanwallachi* sp. nov.

***Epictia antoniogarciai* sp. nov.**

(Figures 2 G–I, 6)

**Holotype:** CORBIDI 7678, from the vicinities of Santa Rosa de la Yunga Village, Jaén Province, Cajamarca Region, Peru (S 05°25'53.3", W 078°33'47.0", 1268 m.a.s.l.), collected by M. Enciso, S. Duran and C. Koch on 4 May 2009.

**Paratypes** ( $N = 4$ ): three specimens from the vicinities Zapatalgo Village, Utcubamba Province, Amazonas Region, Peru: ZFMK 96676 (S 06°04'47.7", W 078°29'18.7", 934 m.a.s.l.), CORBIDI 5670, ZFMK 90934 (S 06°04'44.0", W 078°29'16.7", 968 m.a.s.l.), collected by A. Garcia Bravo and C. Koch between 07–09 December 2009; and one specimen from the type locality: CORBIDI 2069, collected in August 2008 by N. Monsalve.

**Diagnosis.** (1) 14 midbody scale rows; (2) 10 midtail scale rows; (3) 2 supralabials, first large and in broad contact with supraocular; (4) 14–18 subcaudals; (5) 195–208 mid-dorsal scale rows; (6) dorsal scales black with yellow margins; (7) rostral bright yellow or yellowish-white dorsally, and grayish-brown or blackish ventrally; (8) terminal spine and surrounding scales yellow; (9) ventral surface of head, body and tail almost completely grayish-brown or light-gray scattered with dark grayish-brown scales.

**Comparisons** [conditions for other *Epictia* in brackets]: By having 195–208 mid-dorsal scales this species has a higher number than *E. collaris* [155–166] and *E. vanwallachi* [188], and a lower number than *E. albipuncta* [213–285], *E. alfredschmidti* [267–279], *E. borapeliotes* [256–282], *E. columbi* [240–265], *E. melanura* [395–396], *E. rufidorsa* [255–270], *E. septemlineata* [257], *E. striatula* [216–265], *E. subcrotilla* [318–333], *E. teaguei* [232–259], *E. tessellata* [258–283] and *E. tricolor* [285–310]. By having 14–18 subcaudal scales it further differs from *E. columbi* [22–25], *E. melanura* [18–20], *E. munoai* [10–14], *E. nasalis* [21] and *E. tricolor* [18–23]. By

having a different color pattern with dorsal scales black with thin yellowish-white or bright yellow margins, and rostral and terminal portion of tail yellowish-white or bright yellow, it further differs from *E. septemlineata* [dorsum with seven black longitudinal stripes], *E. rubrolineata* [dorsal coloration red with 5 longitudinal stripes], *E. rufidorsa* [striped pattern with a red dorsal longitudinal stripe], *E. teaguei* [tricolor dorsal pattern of red, black and yellow stripes], *E. tenella* [dorsum dark brown with lateral edges of the scales lighter, forming a pattern of serrated longitudinal light lines] and *E. vanwallachi* [dorsal scales brown with thin white or yellowish margins, rostral grayish-brown].

**Description of holotype:** An adult specimen with SVL of 129 mm; TAL of 14.5 mm; MB of 3.8 mm; MT of 3.0 mm; TL/TAL of 9.9; TL/MB of 37.8; HW of 2.8 mm; HH of 2.2 mm; HL of 3.4 mm; DSN of 0.9 mm; DNE of 0.8 mm; ED of 0.6 mm. Head subcylindrical, slightly depressed dorsoventrally, indistinguishable from neck; body cylindrical; not tapered cranially or caudally. Snout rounded in lateral and ventral view. Rostral visible in dorsal view, about 1.5 times longer than wide, almost squared ventrally with dorsal termination (apex) sharply rounded, almost reaching the imaginary transverse line between the anterior borders of the eyes, contacting upper and lower nasal laterally and frontal dorsally.

Nasal completely divided horizontally by a suture slightly oblique, reaching rostral and first supralabial; ellipsoid nostril located almost in the center of the suture between upper and lower nasal, having the major axis oriented along the suture; supranasal about 1.9 times higher than wide and about 1.3 times higher than infranasal, contacting infranasal ventrally, first supralabial and supraocular posteriorly, and frontal dorsally; infranasal 1.7 times higher than wide, about 1.5 times wider than anterior supralabial, contacting first supralabial posteriorly; two supralabial scales, first positioned anteriorly and second posteriorly to ocular scale (1+1); upper lip border formed by rostral, infranasal, anterior supralabial, ocular and posterior supralabial; first supralabial about 2.8 times higher than wide, exceeding nostril, slightly exceeding central level of eye, in contact with supraocular scale dorsally and ocular posteriorly; ocular scale pentagonal with dorsal apex acuminate, 1.5 times higher than wide, contacting supraocular anterodorsally, parietal posterodorsally and second supralabial posteriorly; eye located at level of maximum width of ocular and with lower eye margin at nostril level, positioned anteriorly and almost contacting scale sutures; eyes partly visible in dorsal view; second supralabial subtrapezoidal, about as high as wide, slightly exceeding central level of eye, as high as anterior supralabial, 2.5 times wider than anterior supralabial at widest point; posterior margin of second supralabial in broad contact with temporal and in contact with first scale of lateral body row; dorsal margin of second supralabial in contact with parietal; temporal scale of same size as dorsal scales of lateral rows; supraocular scale almost spindle-shaped, oriented oblique, about twice as long as wide, contacting parietal posteriorly, and frontal and postfrontal dorsally; supraocular, parietal and occipital scales visible in lateral view; mid-dorsal head plates (frontal, postfrontal, interparietal and interoccipital) slightly imbricate, hardly decreasing in size posteriorly, pentagonal or round in dorsal view, higher and narrower than posterior mid-dorsal scales; frontal contacting postfrontal posteriorly; postfrontal contacting supraoculars anteriorly, parietals and interparietal posteriorly; interparietal contacting parietals and occipitals laterally, and interoccipital posteriorly; interoccipital contacting occipitals laterally, and nuchal and three dorsal body scales posteriorly; parietal about 1.8 times higher than wide, as high as occipital, about 1.5 times wider than occipital, both scales almost rectangular in shape; occipital about 2.5 times higher than wide; lower margin of parietal contacting upper border of temporal, posterior margin in broad contact with occipital; lower margin of occipital contacting temporal and first lateral body scale, posterior margin in broad contact with first paravertebral and first dorsolateral scale (latter both scales fused on left side); mental small with a median depression, followed by six infralabials per side, slightly subequal in size; first pair of infralabials rectangular, slightly larger than other infralabials; chin, gular, and dorsal and lateral head scales porous.

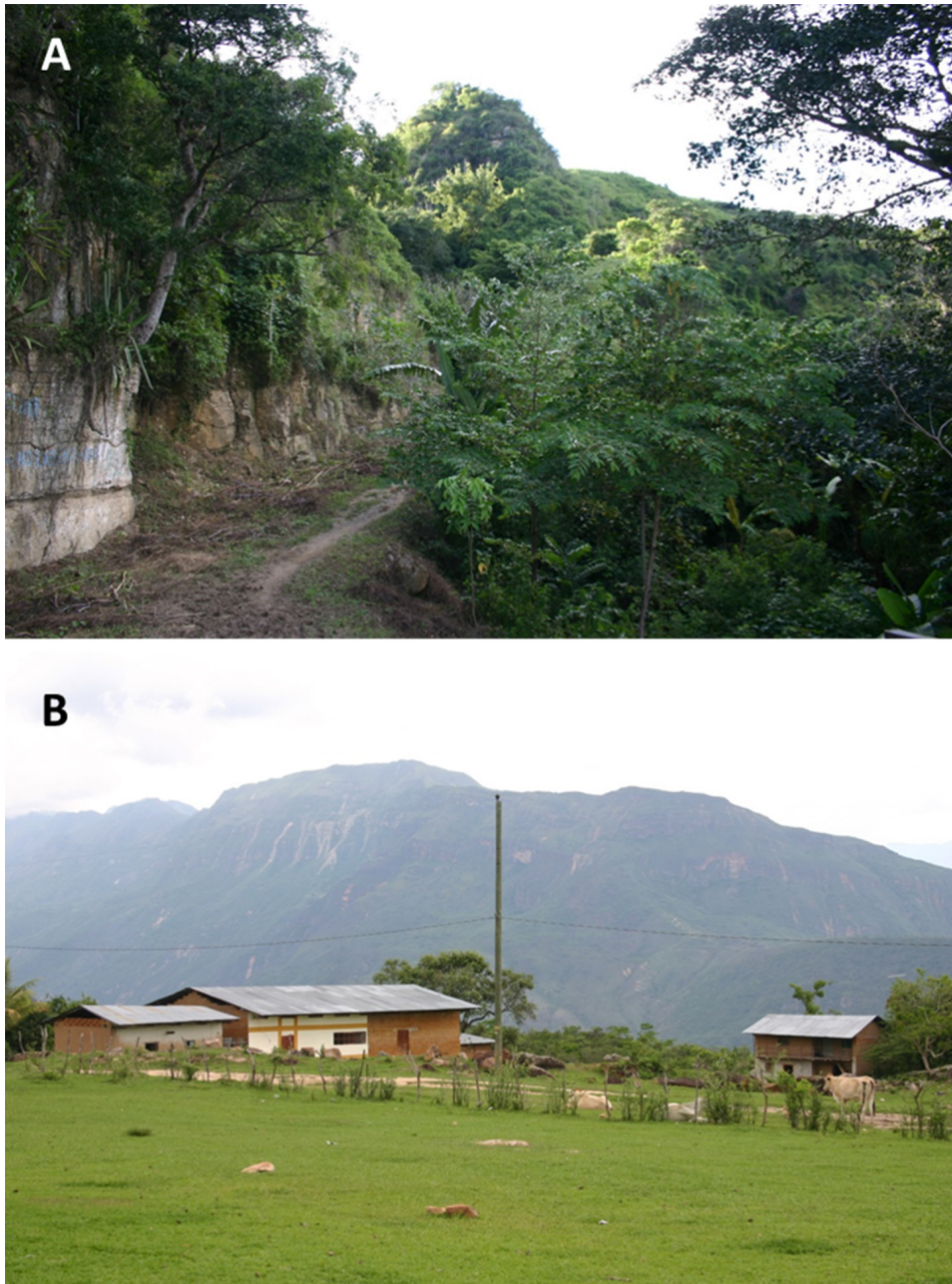
Dorsal scales imbricate, smooth, homogeneous, rhomboid or elliptical in shape, about 1.4 times wider than long; 202 MDS; 14–14–14 D; 184 V; 10 TS; Anal plate large, 1.7 times wider than long, subtriangular in shape with distal apex rounded, bordered anteriorly and posteriorly by five rows of scales; 16 SC, becoming slightly narrower distally, except for ultimate four scales which are each fused with adjacent scales; each of last three scales on the dorsal surface of the tail fused with adjacent dorsolateral scales; terminal spine conical and strongly pointed, with stout base about as wide as long.

**Color of holotype in life:** Anterior portion of head with a large bright yellow blotch, covering completely the dorsal surface of frontal and rostral scales, and partially the supranasal scales; rostral dark grayish-brown ventrally; remaining head and body dorsal scales black, with striking bright yellow margins; terminal spine and surrounding

scales (two rows dorsally and three rows ventrally) bright yellow; ventral surface of head, body and tail light-gray, scattered with numerous darker grayish-brown scales.



**FIGURE 6.** Holotype in life (CORBIDI 7678, A–D) and freshly killed paratype (ZFMK 96676, E–F) of *Epictia antoniogarciai* sp. nov. Dorsal view of entire specimen and close-up of head (A); Ventral view (B); Detail of dorsal (C) and ventral (D) aspects of tail: paratype in dorsal (E) and ventral (F) views.



**FIGURE 7.** Habitat and localities of *Epictia antoniogarciai* sp. nov. Track in the type locality (A); and vicinities of Zapatalgo, Utcubamba Province, Amazonas Region, Peru (B), where the paratypes were collected.

**Color of holotype in preservative:** Coloration of blotch on anterior dorsal scales of the head and terminal portion of tail changed to cream; rostral changed to dark gray ventrally; dorsal scales from head and body changed from dark brown to blackish with cream margins; ventral surface of head, body and tail changed to cream except for some scattered grayish-brown scales.

**Variation.** Morphometric and pholidosis characters of the four paratypes are given in Table 1. The paratypes further vary from the holotype in the following characters: the yellow color pattern is distinctly less striking in three of the paratypes (ZFMK 96676, CORBIDI 5670, ZFMK 90934) than in the holotype: the blotch on the anterodorsal surface of the head is cream or yellowish-white; the dorsals are dark brown to black, most scales with thin, indistinct, yellowish margins; terminal spine pale yellow; ventral surface of head, body and tail almost uniformly grayish-brown, somewhat lighter than dorsal scales, or sometimes scattered with darker scales.

**TABLE 1.** Summary of morphometric and pholidosis characters of the paratypes of *Epictia antoniogarciai* sp.nov. Characters marked with a \* represent measurements given in mm.

	ZFMK 96676	ZFMK 90934	CORBIDI 5670	CORBIDI 2069
MDS	203	208	195	207
V	191	196	181	190
SC	14	16	18	15
<b>SVL*</b>	100	113	111	168
<b>TAL*</b>	6.3	8.3	9.3	11.8
<b>MB*</b>	3.1	3.2	2.9	4.5
<b>MT*</b>	2.5	2.3	2.1	3.3
TL/TAL	16.9	14.6	12.9	15.2
TL/MB	34.3	37.9	41.5	40.0
<b>HW*</b>	2.1	2.2	2.2	3.3
<b>HH*</b>	1.6	2.0	/	2.8
<b>HL*</b>	3.1	3.8	2.6	3.4
<b>DSN*</b>	0.7	0.9	0.5	0.9
<b>DNE*</b>	0.7	0.7	0.6	0.8
<b>ED*</b>	0.5	0.4	0.3	0.6

**Etymology.** This species is dedicated to Antonio Garcia Bravo, Peruvian biologist, in recognition of both, his support in the investigation of the Peruvian herpetofauna and his continued and unattenuated efforts in the conservation of the dry forests along the Marañón River.

**Distribution and natural history.** This species is known from the interandean part of the Equatorial Dry Forest from Santa Rosa de la Yunga in the North to about 80 km southwards (Fig. 8).

The holotype (CORBIDI 7678) was found on 4 May 2009 at 3:30 pm on a track (Fig. 7A). Air temperature was 23.6°C, ground temperature was 25.6°C and air humidity was 73%. ZFMK 96676 was found on 7 December 2009 at 10:40 am lying dead on dry and hot soil (45.5°C). Despite the high ground temperature the specimen was in a good condition indicating that it was only dead for a short time. Two days later at 2:10 pm two further specimens (CORBIDI 5670, ZFMK 90934) were found under stones at the roadside (Fig. B). While lifting the stone CORBIDI 5670 was accidentally killed and its head was destroyed. Air temperature was between 30.5°C–33.8°C, temperature under the stones was 33.6°C and air humidity was between 57%–64%.

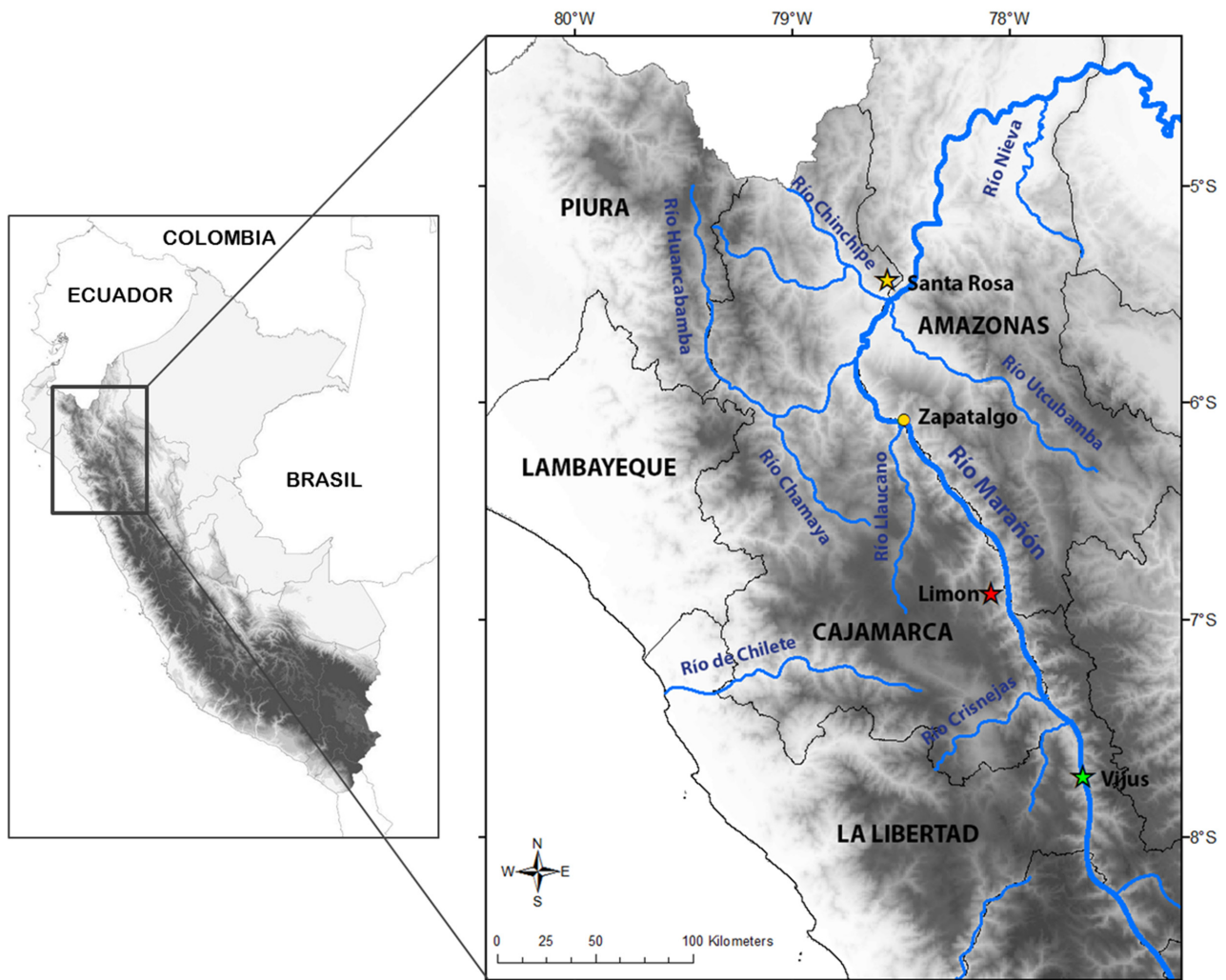
## Discussion

Francisco *et al.* (2012) tested the presence of sexual dimorphism in *Epictia munoai* but could not find differences between males and females in any of the analyzed variables. They further presented a table with meristic and morphometric variation of several other species of *Epictia* which revealed absence of sexual differences in most of the species. Thus dissection of the type specimens for sexing was not necessary for this study.

Comparison of the new species to the Bolivian species *E. undecimstriata* (Schlegel, 1839) was not entirely possible, as the original description of this species is insufficient and the species is only known from the holotype (MHNP), which is lost according to Hahn (1980). Due to the isolated distribution of our collected species in an interandean valley together with a distance to the Bolivian border of well over 1000 km it is very unlikely that one of the herein described species represents *E. undecimstriata*.

Unfortunately only a single specimen of two of the herein described new species could be collected. Furthermore, the habitat of all species is gravely threatened by human interventions in the form of deforestation, fire clearing, mining activities, and above all 20 hydroelectric dams that are in plan of construction along the Marañón River. Most of these dams will have a high negative impact on the environment and the involved flooding will destroy many hectares of dry forest and will thus lead to habitat loss and fragmentation (Q & V Ingenieros

SAC 2007; Finer & Jenkins 2012). Considering these threats, it is most likely that populations of many of the endemic species will decline in the near future. Long-term strategies for the conservation of the biodiversity of this important habitat with its unique flora and fauna should be developed and implemented as soon as possible. To do so, it is indispensable to characterize the composition and conservation status of the flora and fauna of this region and improve the knowledge regarding the respective biological needs of each species. According to this, it was decided to describe the new species despite the fact that only a few specimens are available. Nevertheless, the new species can easily be distinguished from their congeners by their coloration and several pholidotic characters.



**FIGURE 8.** Type localities of *Epictia septemlineata* sp. nov. (Red star), *Epictia vanwallachi* sp. nov. (Green star), *Epictia antoniogarciai* sp. nov. (Yellow star) and locality of paratypes of *Epictia antoniogarciai* sp. nov. (Yellow dot) in the Northern Peruvian Andes.

### Acknowledgments

We are very grateful to Rafe Brown (KU), Patrick Campbell (BM), Alan Resetar (FMNH), José Rosado (MCZ) for allowing access to their museum collections. We thank the Deutscher Akademischer Austauschdienst (DAAD), the Alexander Koenig Stiftung (AKS) and the Alexander Koenig Gesellschaft (AKG) for financial support. The Peruvian Ministerio de Agricultura kindly provided collecting permits (071—2007—INRENA—IFFS—DCB, 0020—2009—AG—DGFFS—DGEFFS, 0424—2010—AG—DGFFS—DGEFFS) and export permits (0017799—AG—INRENA, 001829—AG—DGFFS, 003983—AG—DGFFS). For assistance during fieldwork we are indebted to Alfredo Beraún, Sibylle Duran Zopazo, Marco Enciso, Antonio Garcia Bravo, Erick Hoyos Granda, Napoleon Monsalve and Manuel Palacios Panta. Van Wallach kindly provided useful information on

several specimens of the family Leptotyphlopidae. We thank the residents of our investigation areas for their hospitality, support and assistance during the fieldwork.

## References

- Adalsteinsson, S.A., Branch, W.R., Trape, S., Vitt, L.J. & Hedges, S.B. (2009) Molecular phylogeny, classification, and biogeography of snakes of the Family Leptotyphlopidae (Reptilia, Squamata). *Zootaxa*, 2244, 1–50.
- Arredondo, J.C. & Zaher, H. (2010) A New Species of *Epictia* (Serpentes: Leptotyphlopidae) from Central Brazil. *South American Journal of Herpetology*, 5 (3), 189–198.  
<http://dx.doi.org/10.2994/057.005.0304>
- Baird, S.F. & Girard, C. (1853) *Catalogue of North American Reptiles. Part I. Serpents*. Smithsonian Institution, Washington DC, xvi + 172 pp.
- Börschig, C. (2007) *Taxonomie und Zoogeographie der subterranean Squamatenfamilien Boliviens (Amphisbaenidae, Typhlopidae, Leptotyphlopidae)*. Unpublished diploma thesis, Rheinischen Friedrich–Wilhelms–Universität, Bonn, 267 pp.
- Bridgewater, S., Pennington, R.T., Reynel, C.A., Daza, A. & Pennington, T.D. (2003) A preliminary floristic and phytogeographic analysis of the woody flora of seasonally dry forests in northern Peru. *Candollea*, 58, 129–141.
- Broadley, D.G. & Wallach, V. (2007) A revision of the genus *Leptotyphlops* in northeastern Africa and southwestern Arabia (Serpentes: Leptotyphlopidae). *Zootaxa*, 1408, 1–78.
- Burmeister, H. (1861) *Reise durch die La Plata Staaten, mit besonderer Rücksicht auf die physische Beschaffenheit und den Culturzustand der Argentinischen Republik. Ausgeführt in den Jahren 1857, 1858, 1859 und 1860. Vol. 2*. H.W. Schmidt, Halle, iv + 538 pp.
- Finer, M. & Jenkins, C.N. (2012) Proliferation of Hydroelectric Dams in the Andean Amazon and Implications for Andes–Amazon Connectivity. *PLoS ONE*, 7 (4), e35126.  
<http://dx.doi.org/10.1371/journal.pone.0035126>
- Francisco, B.C.S., Pinto, R.R. & Fernandes, D.S. (2012) Taxonomy of *Epictia munoai* (Orejas–Miranda, 1961) (Squamata: Serpentes: Leptotyphlopidae). *Zootaxa*, 3512, 42–52.
- Franco, F.L. & Pinto, R.R. (2009) *Stenostoma albifrons* Wagler in Spix, 1824 as nomen dubium and recognition of the name *Leptotyphlops tenellus* Klauber, 1939 (Serpentes: Leptotyphlopidae). *Salamandra*, 45 (4), 239–244.
- Freiberg, M.A. & Orejas–Miranda, B.R. (1968) Un nuevo Leptotyphlopidae de la Republica Argentina (Reptilia, Ophidia). *Physis*, 28 (76), 145–147.
- Gray, J.E. (1845) *Catalogue of the Specimens of Lizards in the Collections of the British Museum*. British Museum, London, 289 pp.
- Hahn, D.E. (1980) Liste der rezenten Amphibien und Reptilien Anomalepididae, Leptotyphlopidae, Typhlopidae. *Das Tierreich*, 101, 1–93.
- Hoogmoed, M.S. (1977) On a new species of *Leptotyphlops* from Surinam, with notes on the other Surinam species of the genus (Leptotyphlopidae, Serpentes). Notes on the herpetofauna of Surinam V. *Zoologische Mededelingen*, 51 (7), 99–121.
- Jan, G. (1860) *Stenostoma (Tricheilostoma) bicolor*. In: Jan, G. & Sordelli, F. (Eds.), *Iconographie Générale des Ophidiens*. Georges Jan and Ferdinand Sordelli, Milan.
- Jan, G. (1861) Note sulla famiglia dei tiflopidi sui loro generi e sulle specie del genere *Stenostoma*. *Archivio Per La Zoologia, L'Anatomia E La Fisiologia*, 1, 178–199.
- Klauber, L.M. (1939) Three new worm-snakes of the genus *Leptotyphlops*. *Transactions of the San Diego Society of Natural History*, 9, 59–66.
- Koch, C., Venegas, P.J. & Böhme, W. (2006) A remarkable discovery: Description of a big-growing new gecko (Squamata: Gekkonidae: *Phyllopezus*) from northwestern Peru. *Salamandra*, 42 (2/3), 145–150.
- Koch, C., Venegas, P.J., Garcia–Bravo, A. & Böhme, W. (2011) A new bush anole Iguanidae: Polychrotinae: *Polychrus*) from the upper Marañón basin, Peru, with a redescription of *Polychrus peruvianus* (Noble, 1924) and additional information on *P. gutturosus* Berthold, 1845. *Zookeys*, 141, 79–107.  
<http://dx.doi.org/10.3897/zookeys.141.1678>
- Koch, C., Venegas, P.J., Rödder, D., Flecks, M. & Böhme, W. (2013) Two new endemic species of *Ameiva* (Squamata: Teiidae) from the dry forest of northwestern Peru and additional information on *Ameiva concolor* Ruthven, 1924. *Zootaxa*, 3745 (2), 263–295.  
<http://dx.doi.org/10.11646/zootaxa.3745.2.6>
- Kretzschmar, S. (2006) Revisión histórica y redescipción de *Leptotyphlops albipunctus* (Serpentes: Leptotyphlopidae). *Cuadernos de Herpetología*, 19 (2), 43–56.
- Laurent, R.F. (1984) El género *Leptotyphlops* en la colección de la Fundación Miguel Lillo. *Acta Zoologica Lilloana*, 38 (1), 29–34.
- Lehr, E., Wallach, V., Köhler, G. & Aguilar, C. (2002) New species of tricolor *Leptotyphlops* (Reptilia: Squamata:

- Leptotyphlopidae) from Central Peru. *Copeia*, 2002 (1), 131–136.  
[http://dx.doi.org/10.1643/0045-8511\(2002\)002\[0131:nsotlr\]2.0.co;2](http://dx.doi.org/10.1643/0045-8511(2002)002[0131:nsotlr]2.0.co;2)
- Orejas-Miranda, B.R. (1961) Una nueva especie de ofidio de la familia Leptotyphlopidae. *Acta Biológica Venezolana*, 3, 83–97.
- Orejas-Miranda, B.R. (1964) Dos nuevos Leptotyphlopidae de Sur America. *Comunicaciones Zoológicas del Museo de Historia Natural de Montevideo*, 8 (103), 1–7.
- Orejas-Miranda, B.R. (1967) El género *Leptotyphlops* en la Región Amazónica. *Atas do Simpósio sobre a Biota Amazônica*, 5, 421–422.
- Orejas-Miranda, B.R. (1969) Tres nuevos *Leptotyphlops* (Reptilia: Serpentes). *Comunicaciones Zoológicas del Museo de Historia Natural de Montevideo*, 10 (124), 1–11.
- Orejas-Miranda, B.R., Roux-Estève, M.R. & Guibé, J. (1970) Un nouveau genre de Leptotyphlopidés (Ophidia) *Rhinoleptus koniagui* (Villiers). *Comunicaciones Zoologicas del Museo de Historia Natural de Montevideo*, 10, 1–4.
- Orejas-Miranda, B.R. & Zug, G.R. (1974) A new tricolor *Leptotyphlops* (Reptilia: Serpentes) from Peru. *Proceedings of the Biological Society of Washington*, 87 (16), 167–174.
- Peters, J. & Orejas-Miranda, B.R. (1970) *Catalogue of neotropical Squamata Part I. Snakes. Bulletin United States National Museum*, 297, 1–347.  
<http://dx.doi.org/10.5962/bhl.title.46653>
- Peters, W.C.H. (1881) Einige herpetologische Mittheilungen. *Sitzungsberichte der Gesellschaft naturforschender Freunde zu Berlin*, 1881, 69–72.
- Pinto, R.R., Passos, P., Caicedo-Portilla, J.R., Arredondo, J.C. & Ferna, R. (2010) Taxonomy of the Threadsnakes of the tribe Epictini (Squamata: Serpentes: Leptotyphlopidae) in Colombia. *Zootaxa*, 2724, 1–28.
- Q & V Ingenieros SAC (2007) *Elaboración de resúmenes ejecutivos y fichas de estudio de las centrales hidroeléctricas con potencial para exportación a Brasil*. Ministerio de Energía y Minas, Dirección General de Electricidad, 79 pp.
- Särkinen, T.E., Marcelo-Peña, J.L., Daza Yomona, A., Simon, M.F., Pennington, R.T. & Hughes, C.E. (2011) Underestimated endemic species diversity in the dry inter-Andean valley of the Río Marañón, northern Peru: An example from Mimosa (Leguminosae, Mimosoideae). *Taxon*, 60 (1), 139–150.
- Schlegel, H. (1839) *Abbildungen neuer oder unvollständig bekannter Amphibien, nach der Natur oder dem Leben entworfen und mit einem erläuternden Texte begleitet*. Arne and Co., Düsseldorf, xiv + 141 pp.  
<http://dx.doi.org/10.5962/bhl.title.95393>
- Schmidt, K.P. & Walker, W.F. (1943) Snakes of the Peruvian Coastal Region. *Zoological Series of Field Museum of Natural History*, 24, 297–324.
- Smith, H.M. & Lafe, L.E. (1945) A new South American *Leptotyphlops*. *Proceedings of the Biological Society of Washington*, 58, 29–32.
- Stattersfield, A.J., Crosby, M.J., Long, A.J. & Wege, D. (1998) *Endemic Birds Areas of the World. Priorities for biodiversity conservation*. BirdLife International, Cambridge, UK, 815 pp.  
<http://dx.doi.org/10.2307/4089533>
- Stejneger, L. (1891) Notes on some North American snakes. *Proceedings of the United States National Museum*, 14, 501–505.  
<http://dx.doi.org/10.5479/si.00963801.876.501>
- Taylor, E.H. (1940) Herpetological Miscellanea No. 1. *The University of Kansas Science Bulletin*, 26, 489–571.
- Tschudi, J.J.V. (1845) Reptilium Conspectum quae in Republica Peruana reperiuntur et pleraque observata vel collecta sunt in itinere. *Archiv für Naturgeschichte (Berlin)*, 11, 150–170.
- Vanzolini, P.E. (1996) A new (and very old) species of *Leptotyphlops* from northeastern Brasil (Serpentes, Leptotyphlopidae). *Papeis Avulsos de Zoologia*, 39 (15), 281–291.
- Venegas, P.J., Townsend, J.H., Koch, C. & Böhme, W. (2008) Two new sympatric species of leaf-toed geckos (Gekkonidae: *Phyllodactylus*) from the Balsas region of the upper Marañón Valley, Peru. *Journal of Herpetology*, 42 (2), 386–396.  
<http://dx.doi.org/10.1670/07-1341.1>
- Villa, J.D. (1990) *Leptotyphlops nasalis* (Taylor, 1940). *Catalogue of American Amphibians and Reptiles*, 473, 1.
- Wallach, V. (2003) Scolecophidia miscellanea. *Hamadryad*, 27 (2), 227–244.
- Werner, F. (1901) Reptilien und Batrachier aus Peru und Bolivien. *Abhandlungen und Berichte des Königlichen Zoologischen und Anthropologisch-Ethnographischen Museums zu Dresden*, Bd. 9 (2), 1–14.  
<http://dx.doi.org/10.5962/bhl.title.49442>
- Zug, G.R. (1977) Distribution and variation of *Leptotyphlops tricolor*. *Copeia*, 1977 (4), 744–745.  
<http://dx.doi.org/10.2307/1443175>



**APPENDIX.** Additional specimens examined.

- Epictia albipuncta* (all specimens so far declared as *Leptotyphlops melanotermus*): ARGENTINA: **Tucuman** (FMNH 229948, MCZ 120055, MCZ 120056); BOLIVIA: **Cochabamba**: Alto Chiripiri (FMNH 161503).
- Epictia australis*: PARAGUAY: **Boquerón**: Chaco (ZFMK 36112), Filadelfia (ZFMK 51301), 35km west of Filadelfia (ZFMK 53237, ZFMK 53238), Paratodo (ZFMK 55208).
- Epictia diaplocia*: PERU: **San Martín**: 14km ESE Shapaja, 360 m.a.s.l. (KU 214906); Moyobamba (BM 74.8.4.104); **Madre de Dios**: 15km E Puerto Maldonado, 200 m.a.s.l. (KU 212594); **Huánuco**: Pachitea: Chaglla–Rinconada (CORBIDI 13356, 13357).
- Epictia goudotii*: COSTA RICA: **Guanacaste**: Guanacaste NP (ZFMK 57774, ZFMK 57775).
- Epictia magnamaculata*: VENEZUELA: **Bolívar**: Guri (ZFMK 64415, ZFMK 64416); **Dependencias Federales**: Tarna (ZFMK 64423).
- Epictia melanura*: PERU: **La Libertad** (FMNH 34269, Holotype); Chiclin: (FMNH 34268, Paratype).
- Epictia peruviana*: PERU: **Loreto**: La Pampa de Sacramento (ZFMK 41475).
- Epictia rubrolineata*: ECUADOR: **Loja**: Catamayo valley, 30 km W of Loja (BM 1935.11.3.63).
- Epictia rufidorsa*: PERU: **La Libertad**: Chiclin (FMNH 34305); **Lima**: Lima: Chaclacayo (CORBIDI 6865); Club Villa Tusan (CORBIDI 10417).
- Epictia striatula*: PERU: No data (FMNH 81509, FMNH 81510); **Cuzco**: Marcapata valley (BM 1902.5.29.184, so far declared as *L. melanotermus*); La Convención: CCNN Poyentimari (CORBIDI 8564); BOLIVIA: **Santa Cruz**: Florida: Pampagrande: Pampagrande (ZFMK 66925, ZFMK 66926, ZFMK 66927, ZFMK 75058); Los Negros (ZFMK 75033); Palmasolo (ZFMK 75059).
- Epictia subcrotilla*: PERU: **La Libertad** (FMNH 34304); Chiclin (MCZ 48936 **Piura**: Huancabamba: San Jacinto del Tocto (CORBIDI 14195); **Cajamarca**: Jaén: Bellavista (CORBIDI 1818).
- Epictia teaguei*: PERU: **Cajamarca**: Rio Zana (FMNH 232568); Chota: La Granja (CORBIDI 1604).
- Epictia tenella*: VENEZUELA: **Sucre**: 3–5km N Macuro (KU 133524); PERU: No data (BM 53.2.4.30); **Lima**: Lima: Bellavista (MCZ 17397, MCZ 17393, both specimens declared as *albifrons*); **Amazonas**: Luya: Playa Jumet (CORBIDI 11932).
- Epictia tessellata*: PERU: No data (FMNH 134464); **Lima** (FMNH 35097, FMNH 36726, BM 51.1.19.29); City of Lima: Old distrito de cercado building E (KU 212773); Avenida Circunvalacion, Huachipa (CORBIDI 12707); La Molina, Calle Melgarejo (CORBIDI 12814).
- Epictia tricolor*: PERU: **Ancash**: Huaraz, 3250 m.a.s.l. (KU 135176, KU 135177); **Cajamarca**: Cajabamba, 2700 m.a.s.l. (KU 135178).
- Tricheilostoma dimidiatum*: PERU: **Pasco**: Rio Paucartambo: Yaupi, 1600 m.a.s.l. (KU 135175); BRAZIL: **Roraima**: Ilha de Maracara: Maracara (BM 1994.241).