Phyllomedusa 15(2):147–154, 2016
© 2016 Universidade de São Paulo - ESALQ
ISSN 1519-1397 (print) / ISSN 2316-9079 (online)
doi: http://dx.doi.org/10.11606/issn.2316-9079.v15i2p147-154

Distribution and natural history notes on the Peruvian lizard *Proctoporus laudahnae* (Squamata: Gymnophthalmidae)

Germán Chávez and Juan C. Chávez-Arribasplata

División de Herpetología, Centro de Ornitología y Biodiversidad (CORBIDI), Santiago de Surco, Lima, Peru. E-mail: vampflack@yahoo.com.

Abstract

Distribution and natural history notes on the Peruvian lizard *Proctoporus laudahnae* (Squamata: Gymnophthalmidae). Little has been learned about the lizard *Proctoporus laudahnae* since its description. Based on six specimens collected recently from Achupampa, on the eastern Andean slopes of central Peru, we present data about its geographic distribution, coloration in life, pholidosis variation, and natural history.

Keywords: Achupampa, Andean slopes, Peru, coloration in life, pholidosis variation.

Resumen

Distribución y notas de historia natural de la lagartija peruana *Proctoporus laudahnae* (Squamata: Gymnophthalmidae). Desde su descripción, poco se conoce a cerca de la lagartija *Proctoporus laudahnae*. Basados en seis individuos colectados recientemente en la localidad Achupampa, en las laderas orientales andinas del centro de Perú, presentamos aquí información novedosa sobre su distribución geográfica, coloración en vida, variación en la escamación e historia natural.

Palabras clave: Achupampa, laderas andinas, Peru, coloración en vida, variación en la escamación.

Resumo

Distribuição e notas de história natural do lagarto peruano *Proctoporus laudahnae* (Squamata: Gymnophthalmidae). Desde sua descrição, há poucas informações sobre o lagarto *Proctoporus laudahnae*. Com base em seis indivíduos coletados recentemente na localidade de Achupampa, nas encostas andinas orientais do centro do Perú, apresentamos aqui informações inéditas sobre sua distribuição geográfica, coloração em vida, variação na escamação e história natural.

Palavras-chave: Achupampa, coloração em vida, encostas andinas, Peru, variação na escamação.

Received 29 August 2016
Accepted 28 September 2016
Distributed December 2016

Introduction

Köhler and Lehr (2004) described *Proctoporus laudahnae* from a single locality in the region of Huánuco in central Peru based on two males in preservative (holotype and paratype). Coloration in life, pholidosis (in females), natural history, and ecology of this species were unknown. No distribution data for this lizard have been collected since its initial description. Based on genetic evidence, Doan and Castoe (2005) placed the *P. laudahnae* in genus *Riama* and proposed the new combination *Riama laudahnae*. More recent research (Torres-Carvajal *et al*. 2016) shows that, genetically, *Riama laudahnae* belongs to the *Proctoporus* Clade, and these authors proposed that the original combination, *Proctoporus laudahnae,* is correct. This is not surprising, given that the species is restricted to central Peru, far from all other *Riama*, which are distributed from Trinidad and Tobago, to the Venezuelan Coastal Mountain Range, to the Andean regions of Venezuela, Colombia, and Ecuador (Torres-Carvajal *et al.* 2016). Although the taxonomic status of these lizards is now established, *P. laudahnae* remains a poorly known species. The recent collection of six individuals from a location near the type locality provides new and relevant data about *P. laudahnae*.

Materials and Methods

Six individuals (3 females and 3 subadult males) of *Proctoporus laudahnae* were collected during field surveys on the Andean slopes of central Peru under permit number 066-2014-SERFOR-DGGSPFFS issued by Ministerio de Agricultura del Perú, and deposited at the Herpetology Division of the Centro de Ornitología y Biodiversidad (CORBIDI). Tail length (TL) was measured with a ruler and recorded within 1 mm. Other measurements were made with digital calipers and recorded to the nearest 0.1 mm, as follow: head length (HL), head width (HW), axilla to groin distance (A–G), and snout-vent length (SVL). We follow the scale terminology and description of Kizirian (1996). Specimens were sexed by external observations of the hemipenis or by ventral dissection of individuals that did not have an everted hemipenis. Coordinates were taken with a GPS, and temperature and humidity data were measured with a digital thermo-hygrometer to the nearest 0.1ºC. Data regarding the type series was taken from the original description (Köhler and Lehr 2004).

Results

Measurements and scutellation characters are detailed in Table 1. All specimens conform to diagnostic characters of *Proctoporus laudahnae*— i.e., there are (1) three supraoculars (anteriormost not fused with anteriormost superciliary); (2) the fourth supralabial is fused with one subocular scale; and (3) the dorsal scales are striated and juxtaposed (Figures 1 and 2).

Pholidosis Variation

All individuals have 32–34 longitudinal, dorsal scale rows (unlike the 37 rows in the type series). One male (CORBIDI 16074) is bearing two supraoculars (not 3, as in the rest of the series); and an incomplete suture on the anteriormost supraocular, that is not separating it completely from the first superciliary. Two individuals, one male (CORBIDI 16074) and one female (CORBIDI 16073), have 3 superciliaries; the rest have 4, as in the type series. In females, there are 6 or 7 femoral pores arranged in a proximal row interrupted only by a pair of preanal scales, whereas in males there are 7 or 8, and 9 in the type series (Table 1).

Coloration in Life

The head, dorsum, tail, and flanks of both subadult males and females are yellowish brown or dark brown with irregular, miniscule black blotches on each scale. Both subadult males and

Table 1. Morphometric characters and scale counts of *Proctoporus laudahnae* specimens (CORBIDI 16071, CORBIDI 16072, CORBIDI 16073, CORBIDI 16074, CORBIDI 16076 and CORBIDI 16077) compared to mean measurements and scale counts of the holotype SMF 81727. Character abbreviations: HL (Head length), HW (Head width), SVL (Snout-vent length), TL (Tail length), A-G (Axilla to groin distance), LDR (Longitudinal dorsal scale rows), LVR (Longitudinal ventral scale rows), TVR (Transversal ventral scale rows), SAM (Scales around midbody), SBT (Scales between tympana), SL (Supralabials), IL (Infralabials), SDF (Supradigital scales of finger), IDF (Infradigital scales of finger), SDT (Supradigital scales of toe), IDT (Infradigital scales of toe), FP (Femoral pores), IPDS (Infrapalpebral disc sections), GIC (Genials in contact), SO (Supraoculars), SC (Superciliaries), SO-SC (Supraocular-Superciliary Fusion), SO-SL (Subocular-Supralabial fusion). (*) Tail incomplete.

Character	CORBIDI 16071 (female)	CORBIDI 16072 (female)	CORBIDI 16073 (female)	CORBIDI 16074 (male)	CORBIDI 16076 (male)	CORBIDI 16077 (male)	SMF 81727 (male holotype)
HL (mm)	12.31	11.18	8.98	10.52	8.68	8.40	12.90
HW (mm)	8.10	7.16	5.76	6.61	5.78	5.74	8.70
SVL (mm)	62.70	49.18	34.62	42.14	35.20	32.13	64.00
TL (mm)	107.00	61*	61.00	44*	51.00	29.00	72.00
A-G (mm)	31.03	24.05	19.11	20.05	14.89	17.19	30.50
LDR	32.00	32.00	32.00	33.00	34.00	32.00	37.00
LVR	20.00	20.00	19.00	19.00	20.00	20.00	20.00
TVR	10.00	11.00	10.00	10.00	10.00	10.00	10.00
SAM	34.00	32.00	37.00	36.00	36.00	34.00	36-38
SBT	16.00	15.00	14.00	16.00	17.00	14.00	-
SL	6.00	6.00	6.00	6.00	6.00	6.00	7.00
IL	4.00	4.00	4.00	4.00	4.00	4.00	5.00
SDF	7.00	7.00	7.00	7.00	7.00	7.00	7.00
IDF	11.00	11.00	11.00	11.00	11.00	11.00	11.00
SDT	10.00	9.00	10.00	10.00	10.00	10.00	9.00
IDT	16.00	16.00	19.00	16.00	16.00	17.00	16-17
FP	6.00	7.00	6.00	7.00	7.00	8.00	9.00
IPDS	4.00	4.00	4.00	4.00	4.00	4.00	divided
GIC	2.00	2.00	2.00	2.00	2.00	2.00	2.00
SO	3.00	3.00	3.00	3.00	3.00	3.00	3.00
SC	4.00	4.00	3.00	3.00	4.00	4.00	4.00
SO-SC	no	no	no	yes	no	no	no
SO-SL	yes	yes	yes	yes	yes	yes	yes

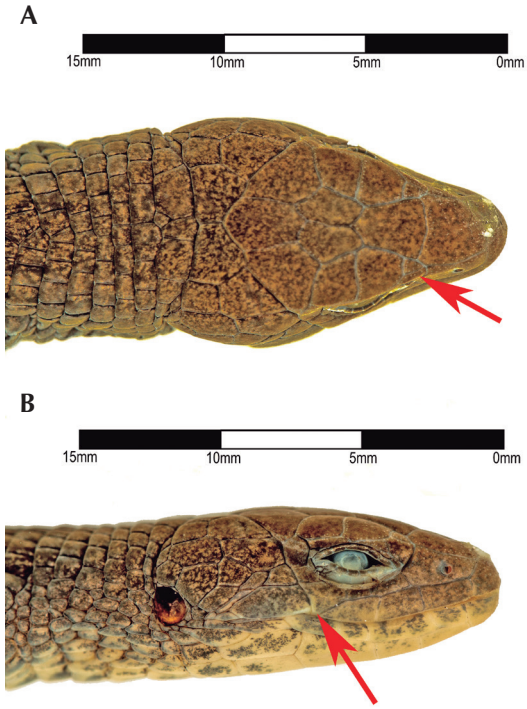

Figure 1. Dorsal and lateral view of the head of an adult female of *Proctoporus laudahnae* (CORBIDI 16071); red arrows show that anteriormost supraocular is not fused with anteriormost superciliary (**A**) and fourth supralabial is fused with a subocular scale (**B**).

females have a weakly defined, dorsolateral black-bordered pale stripe, but the stripe is more obvious in males. A row of 2–5 lateral ocelli extends from the neck to mid-flank in females; in males the row contains 10–13 ocelli and extends from the neck to the insertion of the hind limbs. Supralabials and infralabials are yellowish orange. The throat is creamy yellow and the ventral surface of the neck is creamy yellow with a faint dark spot at the center of each scale. Scales on the chest, belly, and ventral surface of the tail are black with creamy yellow longitudinal borders. The ventral surfaces of the forelimbs and hind limbs are pinkish yellow or creamy yellow with irregular black blotches. The ventral surfaces of the hands and feet are black with longitudinal creamy yellow blotches (Figure 2).

Distribution Extension

On 04 June 2015, three subadult male (CORBIDI 16074, 16076–16077) and three female (CORBIDI 16071–16073) *Proctoporus laudahnae* were collected at Achupampa (9°43'42.7" S, 75°56'47.8" W; 3129 m a.s.l.), Huánuco Province, in the region of Huánuco, Peru (Figure 3), by GC and Diego Vásquez. This new locality is 17 km north of the type locality and is only the second locality from which the species is known. This new locality confirms the presence of *P. laudahnae* along both sides of the Río Huallaga, the primary drainage of the area. The habitat at Achupampa consists mainly of humid grasslands populated by plants of the family Araceae, lichens, terrestrial bromeliads, and moss, as well as scattered patches of elfin forest with trees 15–20 m high, which frequently are covered by lichens, epiphytes, arboreal bromeliads, and exposed roots (Figure 4).

Natural History

Proctoporus laudahnae was collected during the dry season (June) between 9:00 and 10:00 h. All individuals were under clusters of spiny terrestrial bromeliads (Figure 4A) and the ambient temperature was 11.2–13.5ºC with humidity between 44–69%. The bases of the terrestrial spiny bromeliads provide small tunnels, which are used by *P. laudahnae* to burrow into the soil beneath the bromeliad; coleopteran and hymenopteran insects also were found in the soil. No lizards were found under logs, roots, leaf litter, or moss. Four individuals (3 females and 1 male) were captured in communal nesting sites on the ground; the nests contained between two and ten eggs (Figure 4B, C); no embryos were observed in the eggs. One adult female (CORBIDI 16071, SVL 62 mm) was gravid and contained two oviductal eggs

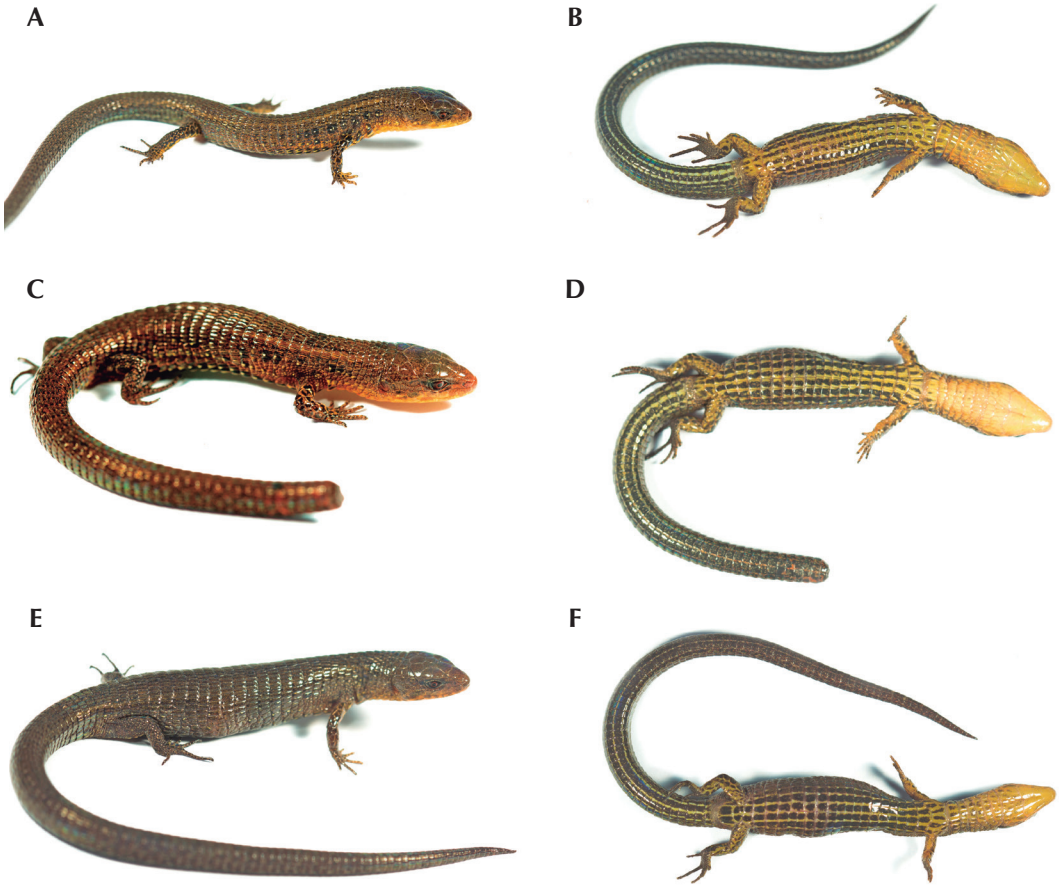

Figure 2. Dorsal and ventral view of the coloration in life of *Proctoporus laudahnae*. (**A, B**) Male, CORBIDI 16076; (**C, D**) Male CORBIDI 16074; (**E**, **F**) Female CORBIDI 16071.

(13.9–14.2 mm); the longer egg represents 11.5% of the SVL. No other species of lizard was found at the site, although we recorded the snake *Tachymenis affinis* Boulenger, 1896 and the frogs *Phrynopus dagmarae* Lehr, Aguilar, and Köhler, 2002 and *P. daemon* Chávez, Santa Cruz, Rodríguez, and Lehr, 2015 on moss microhabitat. The marsupial frog *Gastrotheca griswoldi* Shreve, 1941 was the only other vertebrate recorded inhabiting spiny bromeliads; however, *P. laudahnae* lives beneath the plant, whereas *G. griswoldi* was found perched on the leaves and at the center of the bromeliad.

Discussion

Because the diagnostic character of the species (supralabial-subocular fusion) and other diagnostic characters (3 supraoculars, 2 supratympanic temporals) are present in all our individuals, we assign this population to *Proctoporus laudahnae* sensu lato. Further

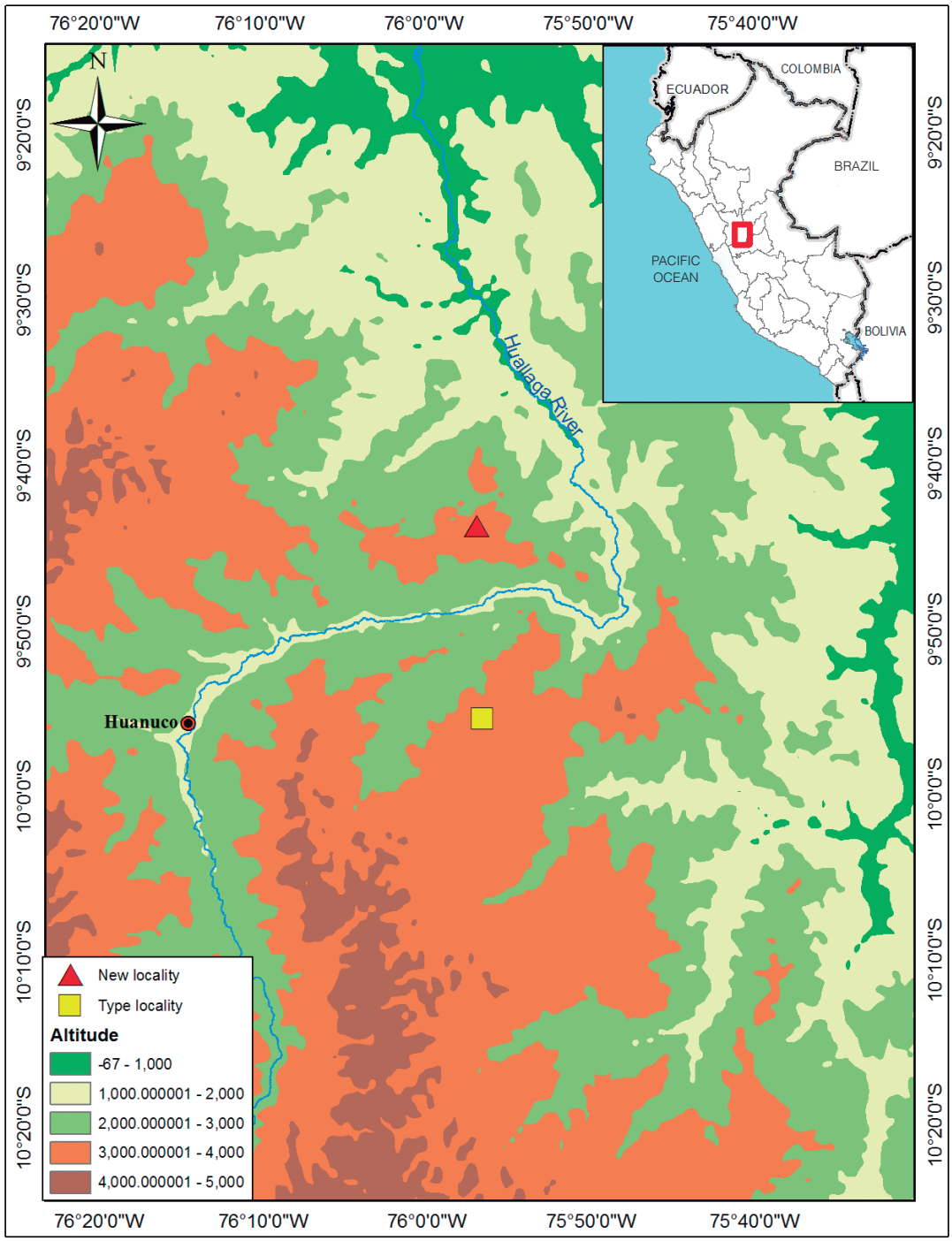

Figure 3. Map showing new locality (red triangle) and the type locality (yellow square) recorded for *Proctoporus laudahnae*. Map by Caterina H. Cosmópolis.

Figure 4. (**A**) Habitat of *Proctoporus laudahnae* at Achupampa in the region of Huánuco; (**B**, **C**) Clutches of *Proctoporus laudahnae* found under spiny bromeliads.

research focusing on molecular analyses is necessary to confirm this identity.

The new specimens provide a larger range of scale characters than do the type and paratype—e.g., the longitudinal dorsal count is lower in all individuals than in the type series. The color patterns in life in both sexes differ from those of the type series, which were preserved in alcohol. The most obvious differences are throat pattern and the presence of lateral ocelli. (Figure 2).

The new locality extends the distribution range of *Proctoporus laudahnae* 17 km; the elevation (3129 m a.s.l.) is close to that of the type locality (3010 m a.s.l.). Despite the short distance, the record confirms the presence of *P. laudahnae* on both sides of the Río Huallaga

River, a possible barrier to the distribution of small lizards, and suggests that *P. laudahnae* could be extensively distributed in highlands on both sides of the upper Huallaga Valley.

Reproductive data suggest that reproductive season most likely begins at the end of March (end of the rainy season) and the first hatchings could emerge from June to July (during the dry season). Spiny bromeliads may be an extremely important part of the life cycle of this species; consequently, we suggest that conservation of the habitats containing this type of vegetation are a key factor in guaranteeing healthy populations of *Proctoporus laudahnae*.

Acknowledgments

We are in debt with Diego Vasquez; without his valuable help on the field this study would not have been possible. We thank Tiffany Doan, Ross D. MacCulloch, Linda Trueb and an anonymous reviewer for their constructive comments and suggestions to improve the paper. Our thanks to Sarah Feder for her valuable help with the grammar of the manuscript. We thank to Biosfera Consultores Ambientales S.A.C. for their logistic support during the surveys.

References

Doan, T. M. and T. A. Castoe. 2005. Phylogenetic taxonomy of the Cercosaurini (Squamata: Gymnophthalmidae), with new genera for species of *Neusticurus* and *Proctoporus*. *Zoological Journal of the Linnean Society 143:* 405–416.

Kizirian, D. A. 1996. A review of Ecuadorian *Proctoporus* (Squamata: Gymnophthalmidae) with descriptions of nine new species. *Herpetological Monographs 10:* 85–155.

Köhler, G. and E. Lehr. 2004. Comments on *Euspondylus* and *Proctoporus* (Squamata: Gymnophthalmidae) from Peru, with the description of three new species and a key to the Peruvian species. *Herpetologica 60:* 501–518.

Torres-Carbajal, O., S. E. Lobos, P. J. Venegas, G. Chávez, V. Aguirre-Peñafiel, D. Zurita, and L. Y. Echevarría. 2016. Phylogeny and biogeography of the most diverse clade of South American gymnophthalmid lizards (Squamata, Gymnophthalmidae, Cercosaurinae). *Molecular Phylogenetics and Evolution 99:* 63–75.

Editor: Ross D. MacCulloch