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## A new Andean lizard of the genus *Potamites* (Sauria, Gymnophthalmidae) from Manu National Park, southeastern Peru

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### Abstract

We describe a new lizard of the genus *Potamites* from elevations of 1000–2100 m in the montane forests of the Cordillera de Paucartambo and the upper Kosñipata valley, Region of Cusco, Peru. The new species differs from other species of *Potamites* by having scattered keeled scales on dorsum, an undivided frontonasal and absence of femoral pores in females.

**Key words:** Squamata, Gymnophthalmidae, Andes, Cusco, stream, cloud forest, taxonomy

### Resumen

Describimos una nueva especie de lagartija del género *Potamites* de los bosques montanos de la Cordillera de Paucartambo y de la parte alta del valle del río Kosñipata, Región de Cusco, Perú, entre los 1000 y 2100 metros de elevación. La nueva especie se diferencia de las otras especies de *Potamites* por tener escamas quilladas desordenadas en el dorso, escama frontonasal no dividida y ausencia de poros femorales en las hembras.

**Palabras clave:** Squamata, Gymnophthalmidae, Andes, Cusco, riachuelo, bosque nublado, taxonomía

### Introduction

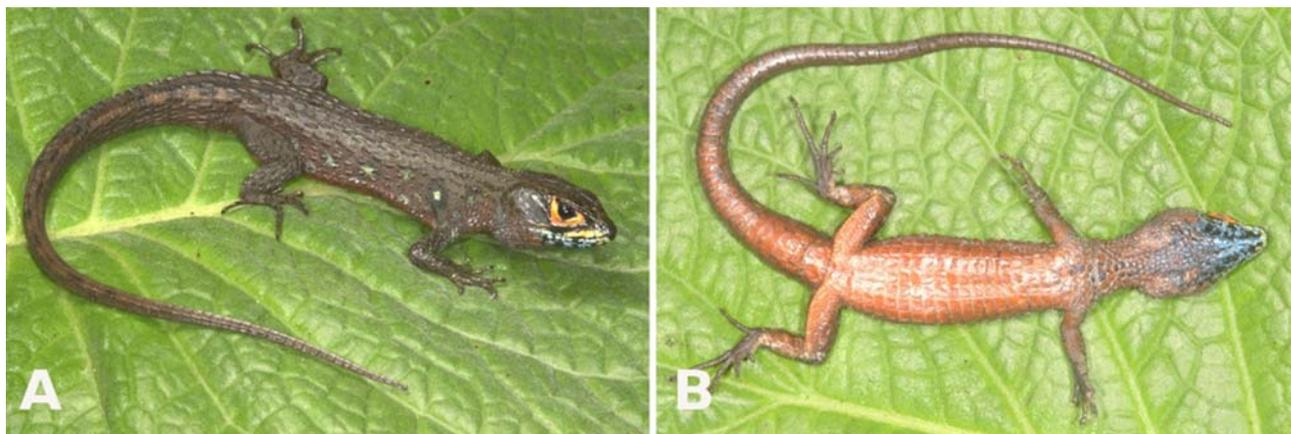
The genus *Potamites* was described by Doan & Castoe (2005) and currently contains seven species: *Potamites apodemus* (Uzzell, 1966) from western Costa Rica and Panama (Lotzkat et al, 2012), *P. cochranæ* (Burt & Burt, 1931) from Ecuador and northern Peru (Catenazzi & Venegas 2013), *P. ecpleopus* (Cope, 1876) from Peru, Bolivia, Brazil, Colombia and Ecuador (Uzzell, 1966; Duellman, 1978; Avila-Pires, 1995; Dirksen and de la Riva, 1999; Torres-Carvajal, 2001), *P. juruazensis* from Río Juruá in Acre state, Brazil (Avila-Pires & Vitt, 1998), *P. montanicola* from Cusco and Ayacucho, Peru (Chávez & Vásquez, 2012), *P. ocellatus* from Rurrenabaque, Amazonian forests of Bolivia (Sinitsin, 1930) and *P. strangulatus* (Cope, 1868) from the Amazon lowlands and Andean foothills of Ecuador and Peru (Uzzell, 1966). Among the four species of *Potamites* that have been recorded from Peru (*P. cochranæ*, *P. ecpleopus*, *P. montanicola* and *P. strangulatus*), only *P. montanicola* occurs in mountain forests up to 2000 m, in the upper Urubamba and Apurimac drainages in the Regions of Cusco and Ayacucho (Chávez & Vasquez 2012). During herpetological expeditions in Manu National Park and the adjacent Kosñipata valley (Catenazzi *et al.* 2011), Cusco, we collected specimens of a high-elevation *Potamites* whose males possess a striking red ring around the eyes, a character shared only with some individuals of *P. strangulatus*. However, in *P. strangulatus* the red ring is incomplete, whereas males of the high-elevation species from Cusco have complete rings. Here we describe this new species.

## Material and methods

The description format for the new species generally follows that of Uzzell (1966), Vanzolini (1995) and Avila-Pires & Vitt (1998). For the comparisons, we used the descriptions of all *Neusticurus* and *Potamites* species known in the literature: data for most *Neusticurus* and *Potamites* were taken from Uzzell (1966), data for *P. juruazensis* was taken from Avila-Pires & Vitt (1998), for *P. ocellatus* from Vanzolini (1995), for *P. montanicola* from Chávez & Vasquez (2012), data of *N. tatei* from Barrio-Amoros & Brewer-Carias (2008) (see Appendix for a detailed list of specimens reviewed). Nomenclature of scale characters and diagnosis follows that of Uzzell (1966) and Köhler & Lehr (2004). Scale size was measured using precision calipers and size values were rounded to the nearest 0.01 mm. For characters recorded on both sides, the condition on the right side is presented first. Everted hemipenes were fixed with formalin 3.7%. Photographs taken by A. Catenazzi were used for descriptions of coloration in life. Photographs of the holotype and selected paratypes have been deposited at the Calphoto online database (<http://calphotos.berkeley.edu>). Locality names were spelled following standards of the US Board on Geographic Names (<http://gnswww.nga.mil>) and, for localities not listed in this database, according to Carta Nacional “Calca”, Hoja 27-s, Instituto Geográfico Nacional, Lima. Specimens used for this study are deposited in the herpetological collections of the Museo de Historia Natural, Universidad Nacional Mayor de San Marcos (MUSM, formerly MHNSM) and the Centro de Ornitología y Biodiversidad (CORBIDI) in Lima, Peru.

### *Potamites erythrocularis* new species

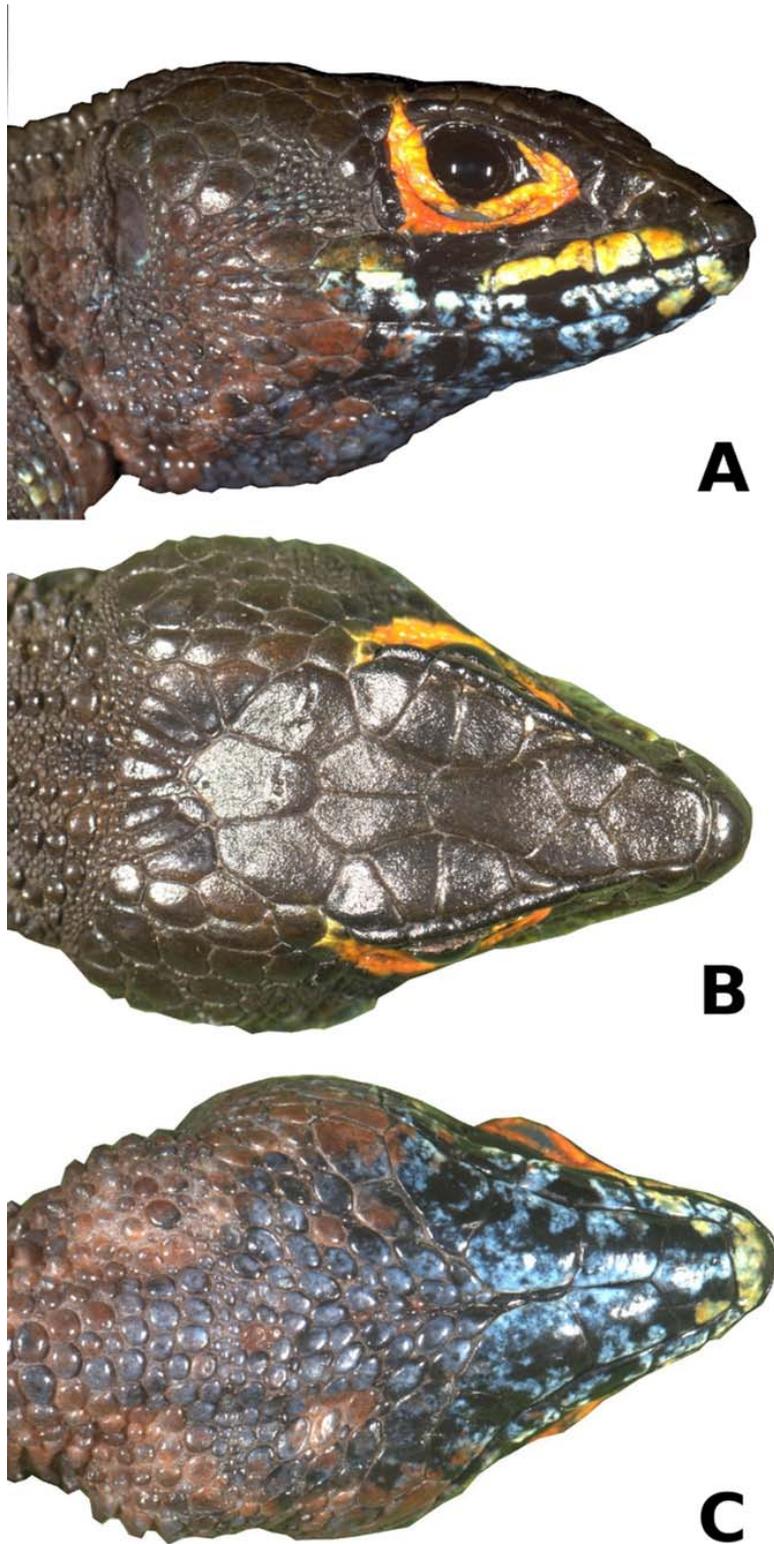
*Holotype* (Figures 1, 2): MUSM 28056, an adult male from Peru, Cusco Region, Province of Paucartambo, District of Kosñipata, Suecia, S13.106270, W71.570640, 1950 m above sea level, collected on 4 February 2009 by A. Catenazzi, J. C. Jahuanchi, A. Machaca, C. Quispe, E. Luna and R. Sotelo.



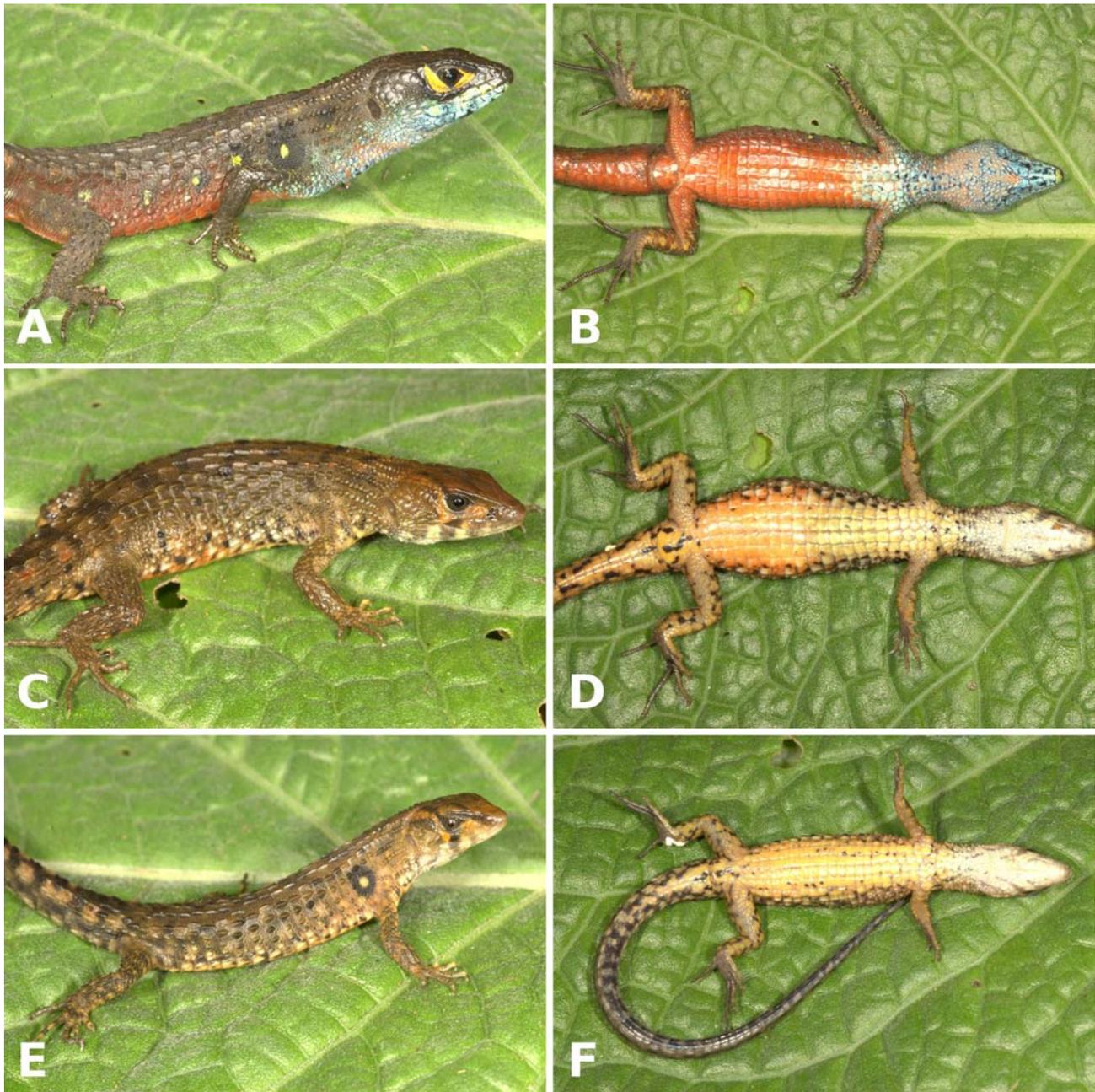
**FIGURE 1.** Dorsolateral (A) and ventral view (B) of coloration in life of the holotype, male MUSM 28056.

*Paratypes* (Figure 3A–D). Five males: MUSM 28057 collected on 4 February 2009, MUSM 26309, CORBIDI 11484, 11485 collected on 28 June 2012 by A. Catenazzi from the type locality (Figure 4), and MUSM 28058 from the District of Kosñipata, Quebrada San Pedro (S13.058310, W71.549620), 1380 m, collected on 28 January 2009 by A. Catenazzi. Nine females, all from the District of Kosñipata: MUSM 17243–45, MUSM 17247–48 and MUSM 17250 from Bosque de Nubes (S13.07035 W71.56849), 1700 m, collected on 9–11 September 1991 by R. P. Reynolds, A. W. Salas, R. W. Bouchard; MUSM 17265 from San Pedro at km. 155 of Paucartambo–Pilcopata road, 1520 m, collected on 15 September 1991 by R. P. Reynolds, A. W. Salas, R. W. Bouchard; MUSM 28059 from between San Pedro and Santa Isabel, 1320 m, collected on 29 January 2009 by A. Catenazzi; MUSM 17272 from Santa Isabel at km. 157 of Paucartambo–Pilcopata road, 1300 m, collected on 24 September 1991 by R. P. Reynolds, A. W. Salas, R. W. Bouchard.

**Diagnosis.** Assigned to *Potamites* by having a tongue with imbricate scale-like papillae, movable eyelids, external ear and heterogeneous dorsal scalation (Doan & Castoe 2005). (1) Head acuminate from dorsal view, rounded from lateral view, scales on the dorsal surface of the head smooth; (2) frontonasal undivided, usually equal



**FIGURE 2.** Later, dorsal and ventral view of coloration in life of the head and details of squamation characteristics of the holotype, male MUSM 28056.



**FIGURE 3.** Dorsolateral and ventral views of male MUSM 28057, SVL 78.5 mm (A, B), female MUSM 28059, SVL 69.5 mm (C, D) and juvenile MUSM 28055, SVL 53.0 mm (E, F), all from the type locality.

or slightly shorter than frontal, azygous scale absent; (3) prefrontals present; (4) frontal present; (5) nasoloreal suture present; (6) supraoculars four, anteriormost not fused with first superciliary, all supraoculars separated from superciliaries; (7) superciliary series complete, usually four; exceptionally five (8) supralabial-subocular fusion absent; (9) postoculars three; (10) postparietals three; (11) hemipenis in two pairs, transverse sutures perpendicular with respect to midline of body; (12) dorsal scales rectangular, juxtaposed, granular and keeled; (13) 42–45 enlarged transverse dorsal rows at midbody; (14) 30–33 longitudinal rows of dorsal keeled scales; (15) 22 – 24 longitudinal ventral rows; (16) 40–42 femoral pores in males, absent in females; two scales between femoral pores; (17) 9–14 subdigital scales on 4th finger, and 20–24 on 4th toe; (18) forelimb reaching anteriorly the fourth supralabial; (19) tail slightly compressed with two rows of lateral scales per two ventral caudal scales; (20) hemipenis acapitate; flounces lacking calcified spines and forming two chevrons on distal half of hemipenis while its basal half is covered with 4 transverse flounces; some asulcate flounces separated by a small expansion pleat; sulcate flounces about as wide as asulcate flounces; sulcus spermaticus single, flanked by a broad naked expansion

pleat widened distally; (21) dorsum dark brown; lateral ocelli present, in two or three pairs in males, usually absent in females; ventral color pattern in males red bright on lower extremities and belly, creamy to pale blue on chest, and blue with red sprinkles and dark blotches on throat and head; ventral coloration in females yellow to pale brown on limbs, chest and tail, orange on the belly, and creamy white on throat and head; (22) lower palpebral disc transparent, undivided, oval.

*Potamites erythrocularis* is distinguished from other *Potamites* and *Neusticurus* species except for *P. montanicola* by having keeled scales that are scattered, and by females lacking femoral pores, and except for *P. strangulatus*, by males having a red ring around the eyes. The new species is differentiated from *P. montanicola* by bearing an undivided frontonasal (divided in *P. montanicola*), having a maximum SVL of 83.6 mm in males (maximum SVL in males of *P. montanicola* 68.6 mm) and showing flat temporal scales (slightly tuberculate temporal scales in *P. montanicola*). Superficially, *P. erythrocularis* resembles *P. eupleopus* and *P. ocellatus*, however it differs from *P. eupleopus* (characters for *P. eupleopus* in parenthesis) by having a lower number of keeled scales on dorsum (see specimens reviewed Appendix 1): 30–33 (36–45), frontonasal undivided (divided), frenocular scale pentagonal (triangular) and a lower number of femoral pores bearing 19–21 in males and lacking in females (25–48 in males and 1–15 in females). Furthermore, the new species differs from *P. ocellatus* (characters for *P. ocellatus* in parenthesis) by its bigger size: 83.6 mm as maximum SVL in males (75 mm), dorsal scales highly keeled (dorsal scales slightly keeled), temporal region covered by medium size polygonal flat scales (vs. covered by large scales interspersed with granules) and has a lower number of femoral pores in males: 20–21 (vs. 41).

*Potamites erythrocularis* is distinguishable from other *Potamites* species by its size, with a maximum SVL of 83.6 mm in males, is longer than *P. cochranae* (70 mm) *P. juruazensis* (50 mm) and *P. ocellatus* (75 mm). Furthermore, the new species has an undivided transparent oval in the lower eyelid (divided in *P. cochranae*), bears dorsal crests (absent in *P. strangulatus*), has tubercles on flanks (absent in *P. cochranae* and *P. strangulatus*), possesses a superficial tympanum (shallow in *P. cochranae*), females lack femoral pores (femoral pores present in females of all species of *Potamites* excepting some individuals of *P. juruazensis* and females of *P. montanicola*), and males have 40–42 femoral pores (vs 26–30 in *P. apodemus*, 10–16 in *P. juruazensis* and 45–59 in *P. strangulatus*).

Furthermore, the new species can be distinguished from species of the genus *Neusticurus* by bearing an undivided palpebral disc (divided in *N. bicarinatus*, *N. racenisi*, *N. rudis*, *N. tatei*), a dorsal crest (absent in *N. racenisi*, *N. rudis*), tubercles on flanks (absent in *N. medemi*, *N. racenisi*, *N. tatei*), by having a slightly recessed tympanum (deep in *N. bicarinatus*, *N. medemi*, *N. racenisi* and shallow in *N. rudis*), by females lacking femoral pores (present in females of all species of *Neusticurus*), by males having 40–42 femoral pores (vs 40–62 in *N. bicarinatus*, 58–64 in *N. medemi*, 62–72 in *N. racenisi*, 32–46 in *N. rudis*, 60–61 in *N. tatei*), and by its intermediate size. Males of the new species have a maximum SVL of 83.6 mm, which is longer than *N. apodemus* (47 mm) and *N. tatei* (72 mm), but smaller than *N. bicarinatus* (117 mm), *N. medemi* (121 mm), *N. racenisi* (104 mm) and *N. rudis* (94 mm).

**Description of the holotype.** Adult male MUSM 28056, body long, laterally compressed, SVL 83.65 mm; tail (complete) length 141.0 mm, axilla to groin distance 38.1 mm; head length 23.01 mm; head width 15.48 mm; shank length 13.81 mm. Pupil round. Tympanum slightly recessed, overhung by surrounding scales of surface of head. Head scales smooth and flat; rostral scale wider (3.25 mm) than long (1.76 mm), higher than adjacent supralabials, in contact with frontonasal, nasoloreal, and first supralabials posteriorly; frontonasal undivided, pentagonal, slightly longer (3.58 mm) than wider (2.81 mm), widest posteriorly, in contact with nasoloreal and frenocular laterally, prefrontals posteriorly; nasoloreal almost triangular, apex in contact with rostral, nasoloreal suture present; prefrontals in contact medially, contacting first superciliary, first supraocular, frontal; frontal longer (4.42 mm) than wider (3.03 mm), anterior suture angular with point directed anteriorly, lateral sutures straight to slightly concave, posterior suture angular with point slightly directed posteriorly, in contact with first, second and third supraocular laterally, frontoparietals posteriorly; frontoparietals paired, pentagonal, in contact with third and fourth supraocular, parietals and interparietal posteriorly; supraoculars four, none in contact with ciliaries; superciliary series complete, four superciliaries, anteriormost superciliary rectangular, longer (2.20 mm) than wider (1.23 mm), not fused with anteriormost supraocular, in contact with frenocular anteriorly, prefrontal, first supraocular, second supraocular and first to third ciliar laterally and with second superciliar posteriorly; interparietal subhexagonal, longer (4.92 mm) than wider (3.50 mm), in contact with parietals laterally, postparietals

posteriorly; parietals pentagonal, in contact with fourth supraocular anterolaterally, temporal scales laterally, dorsalmost postocular, postparietals posteriorly; postparietals nine, smaller than interparietal, asymmetrical, bordering parietals and interparietal; palpebral disc oval, undivided, unpigmented; frenocular squarish, in contact with nasolorear anteriorly; postoculars three; temporals ovoid to polygonal, vary in size, juxtaposed, smooth; supralabials four; infralabials five; mental symmetrical, wider (3.30 mm) than long (2.26 mm), in contact with first infralabials, postmental posteriorly; postmental single, pentagonal, its posterior suture angular, point directed posteriorly, in contact with first and second infralabials; genials in two pairs, anterior pair subquadrangular, in contact at midline and with postmental anteriorly, second and third infralabials laterally, and second pair of genials posteriorly; posterior genials pentagonal, in contact with third and fourth infralabials laterally; scale rows between genials and collar fold (along midventral line) 19, subimbricate, posteriormost row bearing quadrangular scales, other rows bearing rounded scales; posteriormost gular row enfolded posteriorly, concealing two granular scale rows; lateral neck scales conical of a medium size (14–15 mm), also very small smooth scales (0.3 mm), subimbricate; dorsal neck has 8 rows of tubercles that become 2 rows of dorsal keeled scales (the other rows become irregular or combine to join the 2 rows). Scales on trunk heterogeneous, granular laterally, scattered conical tubercles on both flanks of body are posteriorly projected; four longitudinal rows of dorsal keeled scales from the post occipital region to anterior level of insertion of the forelimbs, distributed irregularly (scattered) on dorsum and becoming four regular rows again at the posterior level of insertion of hind limbs, separated by granular scales; transverse dorsal count (enlarged rows at midbody) at fifth transverse ventral scale row 41, at 10th transverse ventral scale row 36, at 15th transverse ventral scale row 36; lateral scales on body near insertion of forelimb small, conical dorsally, mostly granular; ventrals squarish and juxtaposed; complete longitudinal ventral count 24; longitudinal ventral scale rows at midbody 8; 44 scales around midbody; anterior preanal plate scales two; posterior preanal plate scales three; tail complete, compressed, dorsal and dorsolateral surface of tail with at least 77 whorls of enlarged keeled scales forming two crests running longitudinally along the tail, rows of crests separated by 3–5 small, irregularly shaped smooth scales, midventral subcaudals squarish, smooth, cloacal plate smooth, comprising two rounded, triangular, anterior scales, and three posterior scales. Middle posterior scale smaller, shaped like elongated trapezoid, outer posterior scales shaped like rounded squares. Limbs pentadactyl; digits clawed; forelimb reaching anteriorly to fifth infralabial; anterolateral and dorsal brachial scales keeled, imbricate; midbrachial anterodorsal scale at least twice as large as adjacent scales, slightly keeled; anteroventral, ventral, and posteroventral scales granular, imbricate, conical; antebrachial scales polygonal, keeled; medial antebrachial scales small, polygonal, smooth; dorsal manus scales polygonal, imbricate, smooth; palmar scales small, polygonal, smooth; finger length formula  $IV > III > II > V > I$ ; dorsal scales on fingers smooth, quadrangular, covering dorsal half of digit, overhanging supradigital scales, 4/4 on I, 8/8 on II, 11/10 on III, 12/12 on IV, 7/8 on V. Subdigital lamellae 5/5 on I, 10/9 on II, 14/14 on III, 15/17 on IV, 10/10 on V; dorsal thigh scales granular, some scales bearing conical tubercles, anterodorsal thigh scales polygonal, largest than adjacent scales, slightly keeled; posterodorsal thigh scales small, granular, dorsalmost scales tuberculate, arranged irregularly, ventral thigh scales rounded, smooth, several times smaller than anterodorsal thigh scales; anterior and anteromedial shank scales granular, juxtaposed, some scales bearing conical tubercles, anteriormost scales of the same size as lateral, posterolateral, and posteromedial shank scales; lateral, posterolateral, and posteromedial shank scales granular, juxtaposed, some scales conical; toe length formula  $IV > III > V > II > I$ ; scales on dorsal surface of digits single, quadrangular, smooth, overhanging supradigital scales, four on I, seven on II, twelve on III, 17/18 on IV, eleven on V; subdigital scales single or double, seven on I, 11/12 on II, 16/17 on III, 24/23 on IV, fourteen on V; femoral pores 21–21.

The everted hemipenis is an acapitate organ without a medial welt; apex with two large protrusions separated by the distal end of the sulcus spermaticus; sulcus spermaticus single, flounces lacking calcified spines and forming two chevrons on distal half of hemipenis; sulcate flounces about as wide as asulcate flounces; asulcate flounces becoming shorter distally, four in the basal half and twelve in each protrusion, distal chevrons separated by a small expansion pleat; sulcus spermaticus single, flanked by a broad naked expansion pleat widened distally.

Coloration of holotype in preservative (Fig. 2): Dorsal surface of head, dorsal surface of body, tail, limbs, hands and feet dark brown; orbital region rounded by a creamy yellow ring covering pre-ocular, sub-ocular and post-ocular scales, not covering row of superciliaries and supraocular scales, one pair of lateral ocelli with a bluish white rounded center above insertion of forelimbs; supralabial region with creamy white blotches from first to third supralabial, infralabials and throat dark brown, bearing bluish blotches; flanks bearing three pairs of bluish white

blotches, located posteriorly from the pair of ocelli; chest bluish-yellow with some irregular yellow blotches, venter creamy-white with scattered gray blotches. Ventral surfaces of forelimbs dark brown with irregular and diffuse cream blotch; ventral surfaces of thighs pale brown with creamy yellow blotches anterior to femoral pores; ventral surfaces of hands and feet pale brown, turning darker towards tips of fingers; ventral surface of tail creamy-yellow at the base becoming dark brown at the end.

Coloration of holotype in life (Fig. 1). The overall coloration of the body is dark brown dorsally and red ventrally. The throat and ventral surface of the head is blue. The subocular and postocular scales are bright orange. There are six lateral ocelli (black ring with white/pale blue center) and four weakly defined ocelli closer to the ventral side. Supralabials and infralabials white with black striations between scales. Gulars gray-blue, white between scales. Mental scale white with black spots, postmental and genials pale blue with black patches. The first 7 rows of transverse rows of ventral scales are predominantly gray-blue, with patches of red. Rows 8–11 are mostly pale pink, with patches of blue-gray. The other rows of ventrals are red, becoming darker posteriorly. The dorsal scales on head, trunk, forelimb and hind limb are dark brown. Lateral anterior edge of forelimbs brown with thin layer of pale blue. Interior brachials pale red, antebrachials pale blue to dark gray. Palmar and digital scales dark gray with pale red between scales. Anterior inner thigh pale red, posterior inner thigh brown with patches of red and pale blue. Ventral crus scales dark brown mottled with white and red. Ventral pes and digital scales dark gray with light red between scales. Dorsal caudal scales and cloacal plate dark brown with light brown spots in regular longitudinal rows. Anterior subcaudal scales pink with gray patches, become gray-blue posteriorly.

**Variation.** In the type series, only one female (MUSM 17245) is bearing a dorsal crests row with 30 scales, the rest of specimens have 31–33 scales along the dorsal crest. The superciliaries are usually four, but male MUSM 28057 and females MUSM 17245, 17247 and 17272 have 5 superciliary scales. Sexual dimorphism is important: in addition to lacking the red ocular ring, blue throat and red ventral coloration, females lack femoral pores; males are larger (65.9–83.6 mm SVL) than females (64.1–70.9 mm SVL), and head is wider in males (10.9–15.5 mm HW) than in females (9.0–10.6 mm HW). See Table 1 for variation in selected morphometric and squamation characters in the specimens examined.

**TABLE 1.** Morphometric and pholidosis characters in *P. erythrocularis*. Individuals measured include: six males and nine females, all adults. Range is followed by mean value and standard deviation in parenthesis.

<i>Potamites erythrocularis</i> (n=15)		
SVL (mm)	males	84.30–83.65 (74.75 ± 8.02)
	females	61.07–70.86 (66.84 ± 3.17)
Head length/Head width	males	1.46–1.78 (1.54 ± 0.11)
	females	1.62–1.82 (1.72 ± 0.06)
Number of femoral pores	males	20–21 (20.33 ± 0.51)
	females	0 (0.00 ± 0.00)
Scales between tympanum		24–29 (25.73 ± 1.28)
Number of supralabials		5–6 (5.06 ± 0.24)
Number of Infralabials		4–5 (4.06 ± 0.24)
Number of supraoculars		4 (0.00 ± 0.00)
Number of superciliars		4–5 (4.16 ± 0.40)
Number of scales around midbody		42–45 (43.33 ± 1.17)
Longitudinal dorsal count		30–33 (31.66 ± 0.89)
Number of longitudinal ventral scales rows		22–24 (23.4 ± 0.63)
Lamellae under 4th toe		20–24 (21.8 ± 1.16)

**Distribution and ecology.** The new species has been found in streams between 1000–2100 m (Figure 5). These streams drain submontane and montane or cloud forests that grow on the steep slopes of the eastern side of the Cordillera de Paucartambo. The species has been found in a variety of lotic habitats, from small and fully shaded seeps, to large streams receiving abundant sunshine throughout the day. During the wet season (November

to April), lizards can be seen active in water during the day and night, whereas during the dry (and colder) season (May to October), lizards do not seem to be active at night. Most lizards however were found by lifting rocks in the stream channel or by removing aquatic vegetation. Lizards seen at night were hunting aquatic invertebrates.

Our field observations suggest that these lizards operate at body temperatures significantly lower than those recorded in other gymnophthalmids (Pianka & Vitt 2003; Vitt *et al.* 1998a; Vitt *et al.* 1998b), including montane forest species (Anaya-Rojas *et al.* 2010). For example, on 28 June 2012, males CORBIDI 11485 and 11484 were active at 16:50 with a body temperature ( $T_b$ ) of 15.8C and 15.6C respectively. A juvenile found at 21:00 under a rock in the stream had  $T_b = 15.6C$ . Temperatures are higher, but still relatively cold for a lizard, during the day: four individuals found on 25 October 2012, at the end of the dry season, had  $T_b$  between 19.7–20.3C in the late morning and early afternoon, when the water temperature ranged between 15.8–17.2C and the air temperature between 20.3–21.6C.

**Etymology.** The name refers to the red ring surrounding eyes in males.

**TABLE 2.** Morphometric and pholidosis characters in *P. erythrocularis* and species of *Potamites* and *Neusticurus*.

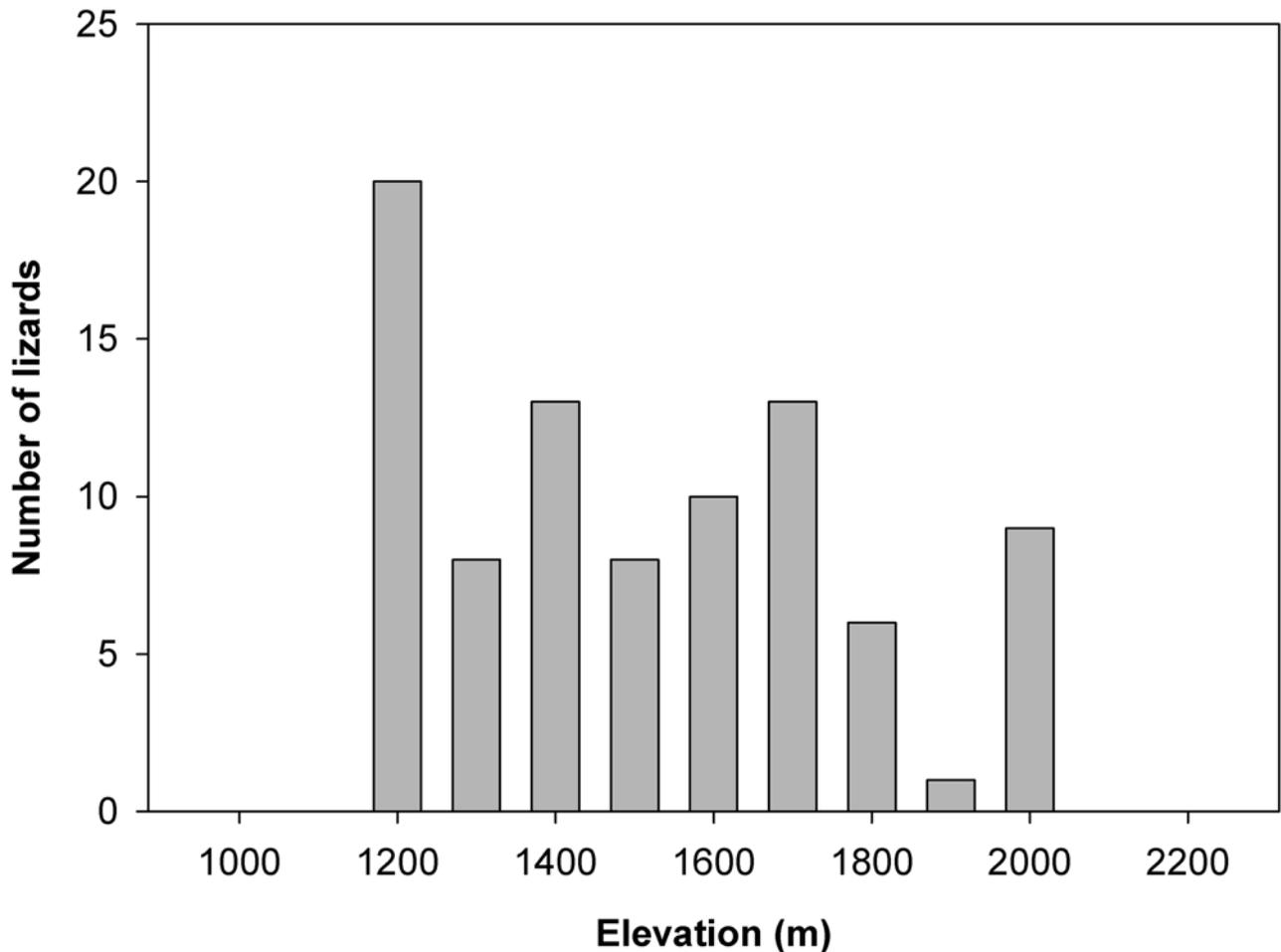
Species	n	Femoral Pores (male)	Femoral Pores (female)	Divisions in Lower Eyelid Disc	Fourth Finger Lamellae	Rows of Dorsal Caudal Crests
<i>P. erythrocularis</i>	16	20.3 (20–21, n=9)	0 (n=6)	0	10.9 (9–14)	2 (some less distinct)
<i>N. bicarinatus</i>	1	40–62	0	4	13	4
<i>N. medemi</i>	6	58–64	9–12	6	19–23	2
<i>N. racenisi</i>	1 (holotype)	78		4	20	0
<i>N. rudis</i>	3	46.0 (44–46, n=2)	0	3.3 (3–4)	14.3 (13–15)	2
<i>N. tatei</i>	1		0	5 and 8	16	0
<i>P. apodemus</i>	Description	26–30	4	2–4	11–14	4
<i>P. cochraeanae</i>	3	45 (n=1)	0 (n=2)	4	13.0 (12–14)	4
<i>P. ecpleopus</i>	17	37.6 (34–42, n=10)	1–6 (n=10)	0	10.8 (9–13)	4
<i>P. juruazensis</i>	Description	10–16	0–2		10–14	2
<i>P. montanicola</i>	10	19–21	0 (n=3)	0	13–17	4
<i>P. ocellatus</i>	1 (holotype)	41		0	13	0
<i>P. strangulatus</i>	5	45–47 (n=2)	9 (7–12, n=3)	0	11.0 (10–12)	2

**TABLE 2.** (Continued).

Species	Median Azygous Scale	Frontonasal Division	Midbody Scales	Tail Compression
<i>P. erythrocularis</i>	Absent	Absent	43.3 (42–45)	Slight
<i>N. bicarinatus</i>	Present	Absent	39	Strong
<i>N. medemi</i>	Present	Absent	85–89	Strong
<i>N. racenisi</i>	Unclear, irregular arrangement of head scales	Absent	58	Strong
<i>N. rudis</i>	Present (2), absent (1)	Present	48.3 (37–55)	Moderate
<i>N. tatei</i>	Unclear, irregular arrangement of head scales	Present	41	Strong
<i>P. apodemus</i>	Present	Present		Slight
<i>P. cochraeanae</i>	Present (2), absent (1)	Absent	43.3 (42–46)	Moderate (n=1)
<i>P. ecpleopus</i>	Present (2), absent (1)	Present	35.2 (31–38)	Moderate
<i>P. juruazensis</i>	Present	Present	31–40	Slight
<i>P. montanicola</i>	Present (6), absent (4)	Present	43–47	Slight
<i>P. ocellatus</i>	Absent	Partial division	38	Moderate
<i>P. strangulatus</i>	Absent	Absent	35.4 (33–37)	Moderate



**FIGURE 4.** Map illustrating the type localities of *Potamites erythrocularis* and *P. montanicola* in the cloud forests of southeastern Peru near Manu National Park.



**FIGURE 5.** Elevational distribution of 88 specimens of *Potamites erythrocularis* (including the holotype and paratypes, observations from uncollected specimens, and specimens collected at the type locality and deposited at KU and the USNM).

## Discussion

Most species of *Potamites* are distributed in the Amazonian lowlands and the foothill of the Andes: *P. strangulatus* between 300–1600 m in Ecuador and Peru (Uzell 1966), *P. cochranæ* between 300–1500 m in Ecuador (Uzell 1966; USNM 284341), and *P. juruazensis* between 100–350 m in the Rio Juruá basin of western Brazil. The largest species in the genus, *P. ecpleopus* has a wide distribution in the Amazonian lowlands and montane forests of Ecuador, Colombia, Brazil, Bolivia and Peru up to 1500 m (Uzell 1966). However, the reported wide distribution of *P. ecpleopus* could mask several cryptic species, especially at high elevations. In addition to these records of *P. ecpleopus*, two other species have been found at high elevations: *P. ocellatus* and *P. montanicola*. *Potamites ocellatus* is known for Rurrenabaque, Beni Province, Bolivia, where it has been reported in montane forests at up to 1500 m (Burt & Burt 1931). The latter species has only recently been described and has been found in streams up to 2000 m in the Region of Ayacucho (Chávez & Vasquez 2012).

Thus, *Potamites erythrocularis* is the second known species of *Potamites* inhabiting montane streams up to 2000 m, a remarkable distribution given the aquatic life styles of these lizards and the relatively low temperatures of these streams. Although the new species has a broad elevational distribution reaching the submontane forest at 1000 m, the populations at the upper boundary are ecologically interesting because the thermal environment is challenging for a lizard. Therefore, the comparative study of thermoregulation behavior and thermal physiology of this species and *P. montanicola* vs. *Potamites* species in the lowlands is likely to offer insight into the evolution of adaptation to cold temperatures in montane lizards.

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## APPENDIX. Specimens examined.

*Potamites cochranæ*: Peru : AMAZONAS: Condorcanqui: Cordillera de Kampankis, CORBIDI 11381–87.

*Potamites ecleopus*: Peru : AMAZONAS, Condorcanqui, Cordillera de Kampankis: CORBIDI 9436, 9509, 9516, 11338; CUSCO: La Convencion, Comunidad Nativa Tangoshiari: CORBIDI 311–13; Pongo de Mainique; – Santuario Nacional Megantoni: CORBIDI 5519; Campamento Kinteroni: CORBIDI 6992–93, 6997; Comunidad Nativa Monte Carmelo: CORBIDI 8331–33; Comunidad Nativa Chokoriari: CORBIDI 8498–99; LORETO: Datem del Marañon, Andoas: CORBIDI 1077, 4637, 4641–43, 4746, 4751, 4981, 5056; Cordillera de Kampankis: CORBIDI 9563–67, 9576–78, 11459–60, 11462–63; San Jacinto: CORBIDI 1208–09; Singasapa: CORBIDI 6529; Rio Corrientes: CORBIDI 2731; Río Yanayacu: CORBIDI 5989; Maynas, Aguas Negras: CORBIDI 280; Redondococha: CORBIDI 286; Requena, Sierra del Divisor: CORBIDI 2246–48, 2585, 4138, 4144; SAN MARTIN: Moyobamba, Comunidad Morro de Calzada: CORBIDI 1360; Picota, Chambrillo: CORBIDI 8834; Lamas, Pongo de Cainarachi: CORBIDI 9059.

*Potamites ocellatus*: BOLIVIA: BENI: Rurrenabaque, AMNH 22512.

*Potamites strangulatus strangulatus*: PERU: AMAZONAS: Condorcanqui, Cordillera de Kampankis: CORBIDI 09523–24, 11415, 11419; LORETO: Datem del Marañon, Cordillera de Kampankis: CORBIDI 9352, 9397, 9399, 9411.

*Potamites strangulatus trachodus*: Peru : AMAZONAS: Bagua, Chonza Alta: CORBIDI 739–744; CAJAMARCA: San Ignacio, Alto Ihuamaca: CORBIDI 878–80; SAN MARTIN: Moyobamba, Comunidad Nativa Paitoja: CORBIDI 1237–41, 1262–63, 3145, 3147, 3192; Fundo Pabloyacu: CORBIDI 1392; Rioja, Zona Reservada Miskiyacu: CORBIDI 1429–30, 1434, 1437, 1441, 3274–75; Tarapoto, Cordillera Escalera: CORBIDI 6366–69, 6383, 6773.