



Crossing Frontiers: First Record of the Western Andean Lizard, *Andinosaura vespertina* (Kizirian 1996), in Peru

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The Western Andean Lizard, *Andinosaura vespertina* (Squamata: Gymnophthalmidae), is a cryptic, short-limbed lizard endemic to the Pacific slopes of the Andes in southwestern Ecuador, where it inhabits shaded microhabitats within remnant patches of highland shrublands and adjacent forest-edge ecosystems (Kizirian 1996; Sánchez-Pacheco et al. 2012; Garzón-Santomaro et al. 2019). Its distribution was thought to be restricted to the Cordillera de Celica, a landscape mosaic of Andean shrublands and western foothill forests at elevations of 1,422–2,929 m asl (Kizirian 1996; Reyes-Puig et al. 2008; Sánchez-Pacheco et al. 2012; Garzón-Santomaro et al. 2019). Listed as Vulnerable (VU) on the IUCN Red List of Threatened Species (Cisneros-Heredia 2019) largely due to threats from agricultural expansion, cattle grazing, and the replacement of native vegetation with exotic timber plantations, some populations remain in protected areas like the Reserva Biológica Utuana in southwestern Ecuador (Reyes-Puig et al. 2008). Citing IUCN criteria, Arteaga (2023), due to the existence of only three known populations and ongoing habitat degradation, proposed reclassifying the species from Vulnerable to Endangered (EN).

The southernmost locality for *Andinosaura vespertina* was within about 50 km of the Peruvian border (Reyes-Puig et al. 2008), raising the possibility of its occurrence in adjacent habitats in northern Peru. With this in mind, we conducted targeted visual encounter surveys (VES) between 2,250–2,600 m asl during a field expedition to the Cordillera de Huancabamba in northwestern Peru. Given the species' cryptozoic habits, we employed intensive methods, including excavation of moss layers, overturning rocks, and inspecting root networks in remnant shrublands, forest edges, and even modified agricultural landscapes, during surveys conducted at two localities by a team of five researchers (20 person-hours at both sites) on 9 and 15 July 2024 (Fig. 1). Captured lizards were photographed, measured, euthanized using T61, fixed in 10% formalin, and stored in 70% ethanol, following

protocols in Beaupre et al. (2004). Voucher specimens were deposited in the Herpetological Collection of the Centro de Ornitología y Biodiversidad (CORBIDI), Lima, Peru, and the identity of the species was confirmed by Pablo J. Venegas.

At midday on 9 July 2024, we collected two adult males (CORBIDI 26885; CORBIDI 26888, Fig. 2A-B), an adult female (CORBIDI 26886), and a juvenile (CORBIDI 26884) on the trail to Bosque de Ramos, about 2.6 km SE of Espindola Village, Ayabaca Province, Piura Region, Peru



Figure 1. Distribution of the Western Andean Lizard (*Andinosaura vespertina*) in southern Ecuador and northern Peru. White circle = type locality, white triangles = records of Ecuadorian populations, red stars = new records from Peru. Ecuadorian records are from Kizirian (1996), Reyes-Puig et al. (2008), and Sánchez-Pacheco et al. (2012).

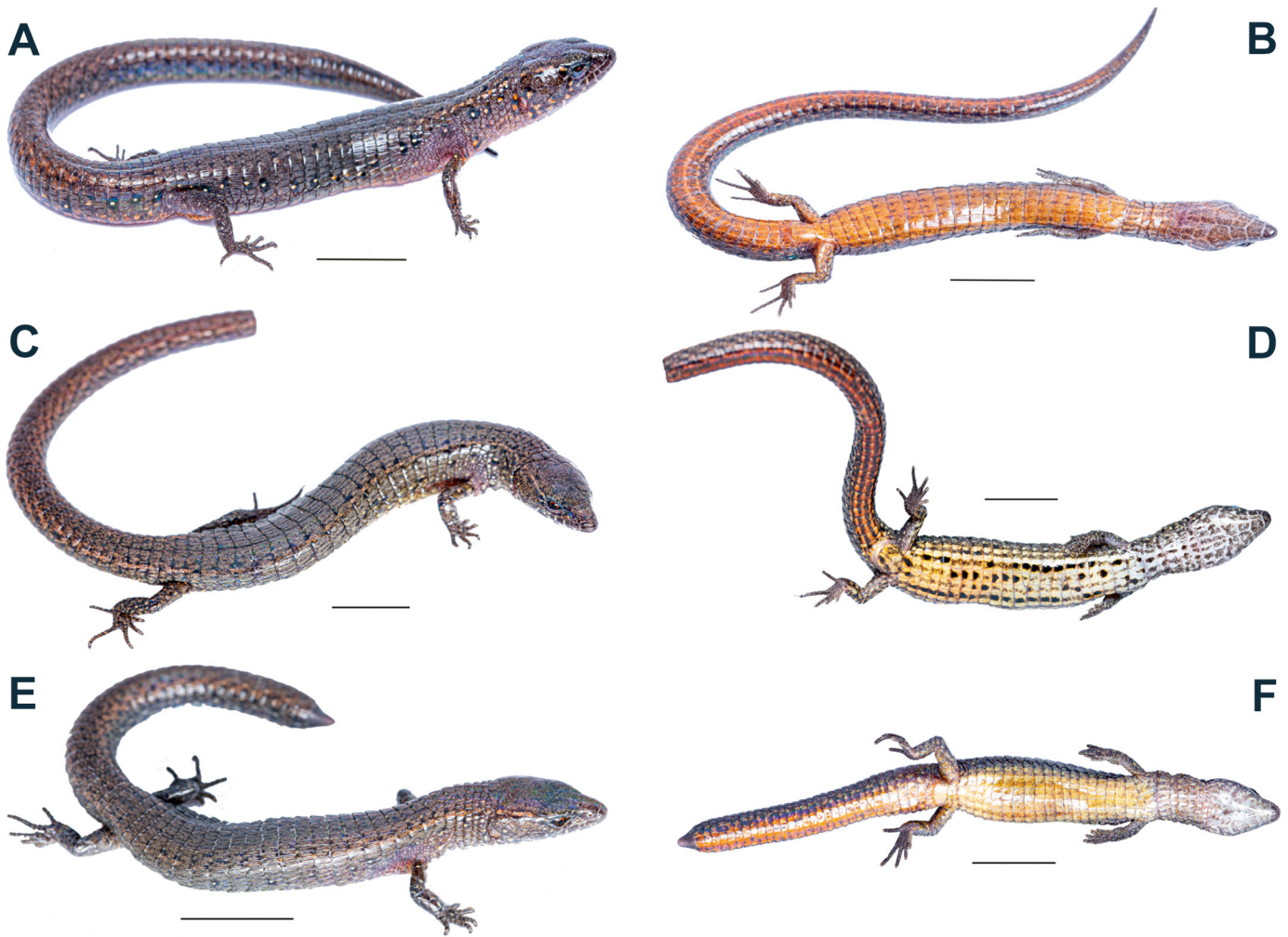


Figure 2. Coloration in life of Western Andean Lizards (*Andinosaura vespertina*) from Peru: adult male CORBIDI 26888 (A–B), adult female CORBIDI 27428 (C–D), and adult female CORBIDI 27434 (E–F). Scale bar = 10 mm. Photographs by Germán Chávez.

(-4.672527, -79.472899; elev. 2,258 m asl; Fig. 3). At 1443–1615 h on 15 July 2024, we collected a juvenile (CORBIDI 27427), and three adult females (CORBIDI 27428, Fig. 2C–D; CORBIDI 27429, CORBIDI 27434, Fig. 2E–F) near the same site (-4.671395, -79.476363; elev. 2,589 m asl; Fig. 3). Individuals were active beneath clusters of rocks arranged by farmers to demarcate property boundaries.

Lizards were collected by Wilmar Aznaran, Jesús Ormeño, Ronal Sumiano-Mejía, Karen Y. Victoriano-Cigüeñas, and Germán Chávez.

All Peruvian specimens exhibited the diagnostic traits of *Andinosaura vespertina* (Table 1): (1) three supraoculars, with the second in contact with superciliaries (Fig. 4); (2) superciliary series interrupted by the second supraocular, separating



Figure 3. Landscape of the area where Western Andean Lizards (*Andinosaura vespertina*) were found in Peru (left); habitat where specimens CORBIDI 26884–86 and 26888 were found (center); and habitat where specimens CORBIDI 27427–29 and CORBIDI 27434 were found (right). Photographs by Wilmar Aznaran.

Table 1. Measurements (mm) and pholidosis of Western Andean Lizards (*Andinosaura vespertina*) collected on the trail to Bosque de Ramos southeast of Espindola Village, Ayabaca Province, Piura Region, Peru.

CHARACTER	CORBIDI 26884	CORBIDI 26885	CORBIDI 26886	CORBIDI 26888	CORBIDI 27427	CORBIDI 27428	CORBIDI 27429	CORBIDI 27434
Sex	Juvenile	Male	Female	Male	Juvenile	Female	Female	Female
Snout-Vent Length (mm)	28.6	43.9	45.3	54.2	33.2	55.3	38.3	42.7
Supraoculars (R/L)	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3
Superciliars (R/L)	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3
Femoral Pores (R/L)	2/1	5/4	1/0	5/4	1/0	0/0	4/4	4/4
Transverse dorsal rows	35	34	35	36	35	34	34	36
Longitudinal dorsal rows	21	20	19	22	20	19	19	21
Laterals	3	2	3	3	2	3	3	3
Transverse ventral rows	22	22	22	22	23	23	23	23

two anterior and one posterior superciliary (Fig. 4); (3) striated dorsal scales; (4) 34–36 transverse dorsal scale rows; (5) 19–22 longitudinal dorsal scale rows; (6) 2–3 lateral scale rows; (7) five femoral pores per hindlimb in males; and (8) ventral coloration ranging from cream to orange-yellow (Kizirian 1996). One particularly consistent and diagnostic feature in all of our specimens is the interruption of the superciliary series (Fig. 4). In southwestern Ecuador, this trait is otherwise known to occur in only one other congener, *A. kiziriani* (Kizirian's Andean Lizard), which is readily differentiated from *A. vespertina* by its dark venter. Head- and dorsal-scale counts in our Peruvian specimens fall entirely within the known variation of Ecuadorian specimens, indicating a high degree of consistency in pholidosis across the species' range. Although broader variation in dorsal-scale counts is known in some congeners (i.e., 30–37 in the Cryptic Andean Lizard, *A. crypta*, and 34–39 in the Ocellated Andean Lizard, *A. oculata*; Kizirian 1996; Sánchez-Pacheco et al. 2011), *A. vespertina* appears to exhibit more uniform meristic traits, even across geographically distant populations.

We did observe some variation in coloration. Male CORBIDI 26888 (Fig. 2A–B) lacks the typical white markings previously reported on head scales (Kizirian 1996; Reyes-Puig et al. 2008); instead, it has black-bordered copper pigmentation on the postoculars, supratympanic temporals, supralabials, and

infralabials. Female CORBIDI 27434 (Fig. 2E–F) has a uniform creamy-yellow venter without dark pigmentation.

In addition to being the first confirmed record of the species in Peru, our discovery extends the known distribution of *Andinosaura vespertina* by 49.6 km (airline) SE of the nearest known Ecuadorian population in Reserva Biológica Utuana, Loja Province (Reyes-Puig et al. 2008). All confirmed localities for *A. vespertina* lie along the western Andean slopes, where the species is tightly associated with mid-elevation shrublands and remnant montane forest (Kizirian 1996; Reyes-Puig et al. 2008). Also, despite its proximity to the Andean Crest, this Peruvian site still drains toward the Pacific Ocean, maintaining biogeographic continuity with the rest of the species' range. Notably, suitable habitats such as montane shrublands and forest-edge environments do not appear to extend eastward beyond the mountain ridges of this region, where paramo ecosystems dominate. This abrupt shift in habitat likely acts as a natural barrier to the eastward expansion of *A. vespertina*. These findings suggest that the species' distribution is confined to a narrow corridor of highland habitat along the western Andean slopes (Fig. 1), yet further targeted surveys in adjacent areas of northern Peru that share similar ecological conditions are needed to confirm this hypothesis.



Figure 4. Heads of three Western Andean Lizards (*Andinosaura vespertina*) from Peru: adult male CORBIDI 26888 (left), adult female CORBIDI 27428 (center), adult female CORBIDI 27434 (right). Note supraoculars (red) separating the superciliary series (turquoise). Scale bar = 5.6 mm. Photographs by Germán Chávez.

Although our new records of *Andinosaura vespertina* in northern Peru are biogeographically significant, they should not be interpreted as a reason to downlist the species' conservation status. Despite the increase in its known distribution (Reyes-Puig et al. 2008; Sánchez-Pacheco et al. 2012; this work), habitat fragmentation continues to escalate throughout its range (Cisneros-Heredia 2019; Global Forest Watch 2025). Recent wildfires in the Cordillera de Huancabamba (Global Forest Watch 2025) serve as stark reminders of the ongoing degradation affecting mid-elevation Andean forests. Although the region of the new records includes a Private Conservation Area (Area de Conservación Privada Bosques de Neblina y Páramos de Samanga), this typically safeguards higher-elevation ecosystems, offering little protection to the lower slopes and forest edges where *A. vespertina* occurs. Expanding formal protection into these lower elevations is unlikely to be feasible in the short term, given the extent of private agricultural holdings in the area. Interestingly, *A. vespertina* appears to persist in shaded microhabitats embedded within agro-pastoral landscapes, such as beneath stone piles marking property boundaries and within remnant shrubland patches. While this suggests some level of tolerance to habitat modification, this apparent resilience might be deceptive. The continued use of fire to expand cattle pastures and the absence of coordinated land management threaten the long-term viability of these habitats. Conservation strategies should engage local landowners in the protection of native vegetation patches and the adoption of fire control measures. Thus, we believe that promoting sustainable land-use practices in collaboration with rural communities will be critical to ensuring the persistence of *A. vespertina* across its fragmented Andean range.

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Literature Cited

- Arteaga, A. 2023. Western Andean-Lizard (*Andinosaura vespertina*). In: A. Arteaga, L. Bustamante, and J. Vieira (eds.), *Reptiles of Ecuador: Life in the Middle of the World*. <https://doi.org/10.47051/RQJT4866>. <https://www.reptilesofecuador.com/andinosaura_vespertina.html>.
- Beaupre, S.J., E.R. Jacobson, H.B. Lillywhite, and K. Zamudio. 2004. *Guidelines for Use of Live Amphibians and Reptiles in Field and Laboratory Research*. Herpetological Animal Care and Use Committee of the American Society of Ichthyologists and Herpetologists, Lawrence, Kansas, USA.
- Cisneros-Heredia, D.F. 2019. *Riama vespertina*. *The IUCN Red List of Threatened Species* 2019: e.T50950579A50950586. <https://doi.org/10.2305/IUCN.UK.2019-3.RLTS.T50950579A50950586.en>.
- Garzón-Santomaro, C., J. Sánchez-Nivicela, P. Mena-Valenzuela, D. González-Romero, and J. Mena-Jaén. 2019. *Anfibios, Reptiles y Aves de la Provincia de El Oro. Una Guía para la Identificación de Especies del Páramo al Manglar*. Segunda Edición. Publicación Miscelánea No. 11. Serie de Publicaciones. GADPEO-INABIO, Quito, Ecuador.
- Global Forest Watch. 2025. *Peru, Piura, Ayabaca*. Global Forest Watch, Washington, DC 20002, USA. <<https://www.globalforestwatch.org/dashboards/country/PER/21/1/?category=forest-change>>.
- Kizirian, D.A. 1996. A review of Ecuadorian *Proctoporus* (Squamata: Gymnophthalmidae) with descriptions of nine new species. *Herpetological Monographs* 10: 85–155. <https://doi.org/10.2307/1466981>.
- Reyes-Puig, J.P., M. Altamirano B., and M.H. Yáñez-Muñoz. 2008. Reptilia, Squamata, Gymnophthalmidae, *Riama balneator* and *Riama vespertina*: Distribution extension, Ecuador. *Check List* 4: 366–372. <https://doi.org/10.15560/4.3.366>.
- Sánchez-Pacheco, S.J., D.A. Kizirian, and P.M. Sales-Nunes. 2011. A new species of *Riama* from Ecuador previously referred to as *Riama hyposticta* (Boulenger, 1902) (Squamata: Gymnophthalmidae). *American Museum Novitates* 3719: 1–15. <https://doi.org/10.1206/3719.2>.
- Sánchez-Pacheco, S.J., V. Aguirre-Peñafiel, and O. Torres-Carvajal. 2012. Lizards of the genus *Riama* (Squamata: Gymnophthalmidae): the diversity in southern Ecuador revisited. *South American Journal of Herpetology* 7: 259–275. <https://doi.org/10.2994/057.007.0308>.