

LISTS OF SPECIES

Reptilia, Squamata, Leptotyphlopidae, *Leptotyphlops*, Ecuador: Re-evaluation of the species cited for the country.

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Abstract: Upon analysis of the information supporting the inclusion of different *Leptotyphlops* taxa as part of the herpetofauna of Ecuador, I conclude that *Leptotyphlops anthracinus*, *L. guayaquilensis*, and *L. subcrotillus* are the only species with confirmed records from the country. *Leptotyphlops anthracinus* and *L. guayaquilensis* are Ecuadorian endemics and the presence of *L. subcrotillus* is supported herein by publication of data about the first vouchered specimen. *Leptotyphlops signatus* and *L. tenellus* should be excluded from the reptile fauna of Ecuador because all previous records were based on misidentified specimens or specimens of uncertain origin. Studies on the *Leptotyphlops* of Ecuador are greatly needed. Several unidentified specimens are deposited in museum collections and may correspond to new distributional records or unnamed taxa.

Introduction

The fossorial snakes of the family Leptotyphlopidae are distributed across America, Africa, and western Asia from Turkey to northwest India (McDiarmid et al. 1999). In America, the family occurs from southern North America (from southwestern USA) throughout Central America, the Caribbean region, and South America (except for Chile) (Orejas-Miranda 1970; McDiarmid et al. 1999). The genus *Leptotyphlops* includes more than 50 species living in America, but only five of them have been cited for Ecuador: *Leptotyphlops anthracinus*, *L. guayaquilensis*, *L. signatus*, *L. subcrotillus*, and *L. tenellus* (Miyata 1982; Almendáriz 1991; Pérez-Santos and Moreno 1991; Coloma et al. 2000–2007). Knowledge on these fossorial vermiform snakes is extremely deficient in Ecuador and no contributions have been published about these peculiar snakes in the country for decades. Herein I re-evaluate the evidence for the inclusion of the five species of *Leptotyphlops* as part of the fauna of Ecuador and conclude that *L. signatus* and *L. tenellus* should be excluded. Furthermore, I present the first vouchered record of *Leptotyphlops subcrotillus* from Ecuador.

Materials and methods

Museum collections cited in the text and their abbreviations are as follows: *División de Herpetología, Museo Ecuatoriano de Ciencias Naturales*, Quito (DHMECN); *Fundación Herpetológica Gustavo Orcés*, Quito (FHGO); National Museum of Natural History, Smithsonian

Institution, Washington, D.C. (USNM); and Academy of Natural Sciences of Philadelphia, Philadelphia (ANSP).

Results and discussion

Two of the five species of *Leptotyphlops* reported for Ecuador are endemic taxa to the country: *L. anthracinus* and *L. guayaquilensis* (Bailey 1946; Orejas-Miranda and Peters 1970; McDiarmid et al. 1999). *Leptotyphlops anthracinus* is known from three localities, two on the Cordillera Oriental (type-locality: near Baños, 1800 m elevation, province of Tungurahua; and Abitagua, 1100 m elevation, province of Pastaza) and one on the Cordillera Occidental of Ecuador (Balsapamba, ca. 1000 m elevation, province of Bolívar; Bailey 1946; Shreve 1964; Orejas-Miranda 1967; Orejas-Miranda 1970). *Leptotyphlops guayaquilensis* was described by Orejas-Miranda and Peters (1970) from a specimen collected at Guayaquil in the central Pacific coastal lowlands of Ecuador and no subsequent records have been mentioned in the literature (Orejas-Miranda and Peters 1970; McDiarmid et al. 1999).

Leptotyphlops signatus (as *L. amazonicus*), *L. subcrotillus*, and *L. tenellus* were first cited for Ecuador by Miyata (1982) and subsequently have been consistently cited for the country in all lists dealing with reptiles of Ecuador (Orejas-Miranda 1970; Almendáriz 1991; Pérez-Santos and Moreno 1991; Coloma et al. 2000–2007). *Leptotyphlops subcrotillus* was described by Klauber (1939)

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based on a specimen collected at Grau, department of Tumbes, Perú (Orejas-Miranda 1970; Schmidt and Walker 1943). To the best of my knowledge, the inclusion of *L. subcrotillus* was not supported by a voucher specimen and no precise locality has been mentioned in the literature, further than the coastal region of Ecuador (Miyata 1982; Pérez-Santos and Moreno 1991). I present herein the first vouchered specimen of *L. subcrotillus* for the country (DHMECN 3491), collected at Santa Elena, province of Guayas, Republic of Ecuador, by Carmen Ponce on August 2003. The specimen is characterized by the high number of body scales and the presence of yellowish-white spots on the rostral and caudal scales, supporting its identification as *L. subcrotillus*. Additional material either belonging to this species or to *L. guayaquilensis* has been collected from across the entire Pacific coast of Ecuador (provinces of Esmeraldas, Manabí, Guayas, and El Oro) and remains deposited in several museum collections (e.g. QCAZ 1324, 1498, 2286, 3307; FHGO 2693; DHMECN 955, 3492; USNM 232401–2, 284058). A revision of most of this material is in progress in order to determine its identity (B. Purtschert, P. Meza-Ramos, and M. Yáñez-Muñoz, pers. comm.).

The inclusion of *L. signatus* as part of the fauna of Ecuador is based on its synonym, *Leptotyphlops amazonicus* (Orejas-Miranda 1969; Hahn 1979). *Leptotyphlops amazonicus* was described from five specimens from south-eastern Venezuela and one specimen of unknown origin. Orejas-Miranda (1969) wrote as follows in relation to the latter specimen (free translation from Spanish): "Unknown origin, probably from Ecuadorian Amazonia (Orton Col.): ANSP 3290 (Paratype)". The suggestion that the specimen is from Ecuador is just based on its association with the Orton collection. However, Cope (1876; 1877) did not mention any specimen of *Leptotyphlops* in his reports of the specimens collected from Ecuador and Peru by the Orton expedition. Cope (1976) indicated that the Orton expedition divided in two parties, one ascending the Orinoco River and the other through the Amazon. Thus it is likely that the specimen of *L. signatus*, if part of the Orton collection, was collected by the first party while in Venezuela and not by the second in the Amazon.

Specimens of other species, like *Thamnodynastes lanei* (Bailey et al. 2005), have been found in the Orton collection labeled as being from Ecuador or Peru, but otherwise known from Brazil or Venezuela.

Leptotyphlops tenellus was included in the Ecuadorian fauna apparently based on a specimen (USNM 232405) collected on the inter-Andean valley of Cuenca in the province of Azuay, southern Ecuador (Pérez-Santos and Moreno 1991; pers. obs.). *Leptotyphlops tenellus* is otherwise known from the Guiana Shield, Trinidad, and the Amazonian region of Brazil and Peru (Klauber 1939; Orejas-Miranda 1967; 1970; Thomas 1975; Hoogmoed 1977). This species is sometimes considered a synonym of *L. albifrons* (see Hoogmoed and Gruber 1983; Vanzolini 1986), but Wallach (in McDiarmid et al. 1999) suggested that it should be treated as a different species. Nevertheless, the Ecuadorian specimen differs from *L. tenellus* and *L. albifrons* by having different morphological and scalation characters and apparently corresponds to an undescribed species.

Based on the available evidence, I suggest that just three species of *Leptotyphlops* should be included in the Ecuadorian list of reptiles: *L. anthracinus*, *L. guayaquilensis*, and *L. subcrotillus*. Currently, there is no confirmed evidence for either *L. signatus* or *L. tenellus* from Ecuador since all previous records were based on misidentified specimens or specimens of uncertain origin.

In addition to the apparently undescribed species from the valley of Cuenca in southern Andean Ecuador, there are some records of *Leptotyphlops* in the Andean foothills of northwestern Ecuador, province of Pichincha (pers. obs.), which may correspond to another undescribed species. There are three specimens of *Leptotyphlops* from Amazonian Ecuador deposited at the USNM collection, but its specific identity has not been determined. It is possible that those specimens correspond to *L. albifrons* or some related species. It is clear that further studies are urgently needed on this extremely poorly known group of snakes from Ecuador.

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