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Leiocephalus sixtoi.

***Leiocephalus sixtoi* Köhler, Rodríguez Bobadilla, and Hedges
Hispaniolan Dune Curly-tailed Lizard**

T[ropidurus]. schreibersii: Fitzinger 1826:49 (part). *Nomen nudum*.

Pristinotus schreibersii Gravenhorst 1838 (“1837”):739 (part). Type locality, “San Domingo,” restricted by Schwartz (1968) to the vicinity of Port-au-Prince, Département de l’Ouest, Haiti. Cochran (1941, 2005) indicated that the holotype was reported to exist in the Breslau Museum (now the Museum of Natural History at Wrocław University) but it could not be located (Schwartz and Thomas 1975). Köhler et al. (2016) considered it to be lost and designated a neotype: an adult male, Senckenberg Museum Frankfurt (SMF) 26228, collected from Saint-Marc, Département de l’Artibonite, Haiti by Robert Mertens on 19 April 1939. See also **Remarks**.

Steironotus schreibersii: Fitzinger 1843:70 (part). New combination.

Liocephalus schreibersii: Cope 1868:123 (part). New combination.

Leiocephalus schreibersii: Barbour 1914:301 (part). Emendation.

Leiocephalus schreibersi: Schwartz 1968:39 (part). Unjustified emendation.

Leiocephalus c[arinatus]. schreibergi: Ashton and Ashton 1985:172 (part). *Lapsus*.

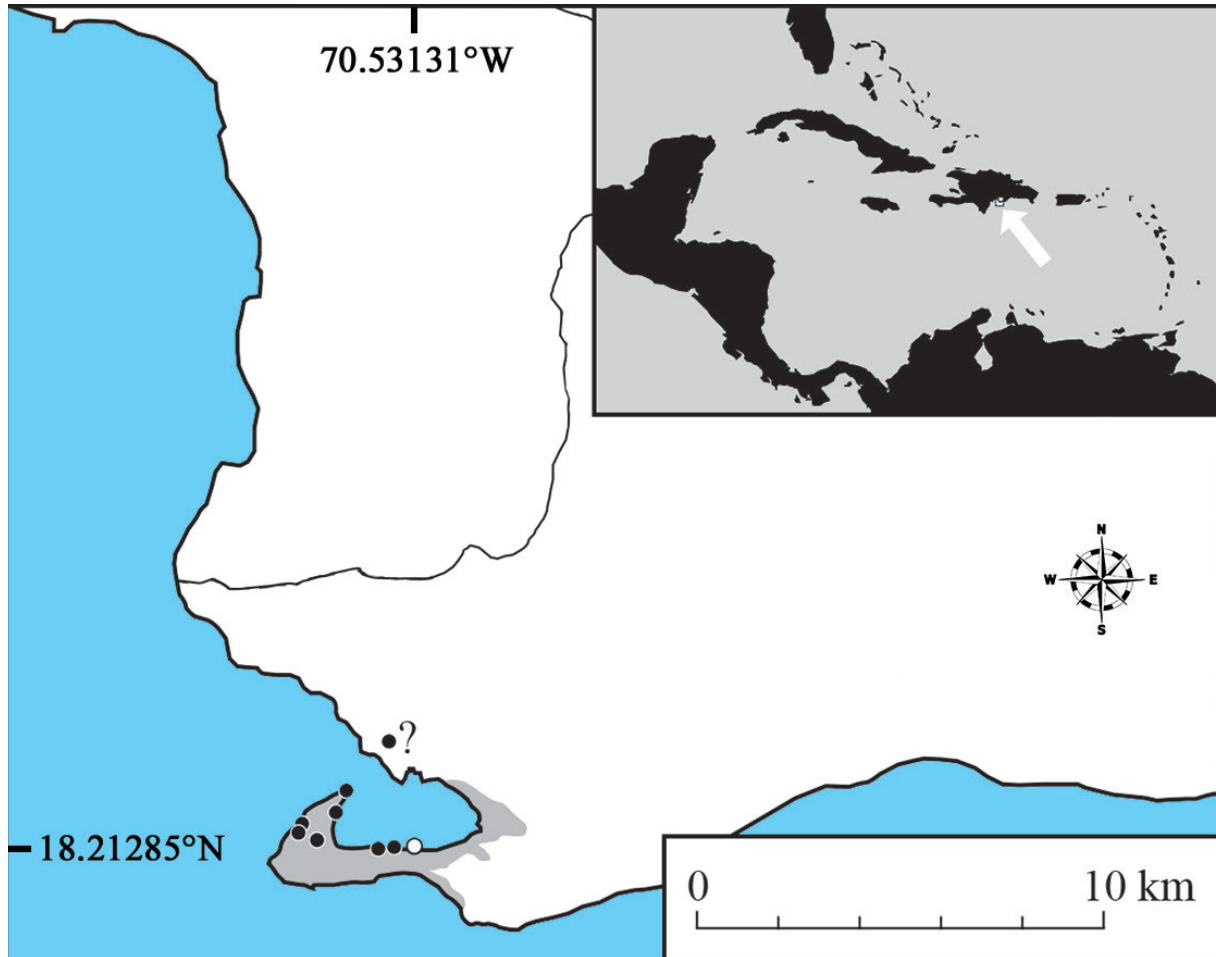
Leiocephalus sixtoi Köhler, Rodríguez Bobadilla, and Hedges 2016:519. Type locality, “Dunas de Baní, near the village of Las Salinas, 18.21285°, -70.53131°, 5 m asl, Provincia de Peravia, Dominican Republic.” Holotype, an adult male, Senckenberg Museum Frankfurt (SMF) 99143, collected by M. J. Rodríguez Bobadilla on 22 March 2014 (not examined by authors).

CONTENT. No subspecies are recognized.

DESCRIPTION. *Leiocephalus sixtoi* is a moderately sized member of the genus (maximum snout–vent length [SVL] in males is 88 mm, maximum SVL in females is 70 mm) with a distinct lateral fold containing smaller scales in the fold; imbricate and keeled dorsal scales; imbricate, smooth, and subcycloid to very weakly denticulate ventral scales; and slightly enlarged dorsal crest scales less enlarged than middorsal caudal scales. Males possess 2–3 pairs of enlarged postcloacal scales. Scales around midbody number 68–79 (74.2 ± 3.4 [mean \pm 1 standard deviation]; 18 specimens examined) and slightly enlarged



FIGURE 1. Adult male *Leiocephalus sixtoi* from near the type locality. Photograph by Eladio Fernández.



MAP. Distribution of *Leiocephalus sixtoi* in the Dunas de Baní, Provincia de Peravia, Dominican Republic on the island of Hispaniola. The open circle represents the type locality and the dots indicate additional localities. The question mark designates an uncertain record. Gray shading represents a hypothesized distribution for this species, and highlights appropriate habitat.

median dorsal crest scales 72–80 (75.1 ± 2.5). Head scalation usually with 6–8 (7.0 ± 0.8) supraoculars, 3–4 internasals (3 in all but one individual), 3–4 (3.7 ± 0.4) lorilabials anterior to the enlarged subocular, 4 supralabial scales to the level of mideye; 5–6 (5.2 ± 0.4) infralabial scales to the level of mideye, and 25–28 (26.3 ± 0.9) subdigital lamellae on Phalanges II–IV of Toe IV; one specimen with a complete tail had a ratio of tail length/SVL = 1.64 (Köhler et al. 2016).

This species exhibits sexual dichromatism (Köhler et al. 2016). Both sexes have a pattern of distinct series of dark grayish-brown blotches on the lateral surfaces of the body, but the ventral surface of head and neck is

mostly immaculate in males, whereas those of females bear distinct dark spots.

Coloration in life of the adult male holotype (Köhler et al. 2016:523, with color codes in parentheses from Köhler 2012) was: “Dorsal surface of head Olive Brown (278) with Pale Cinnamon (55) suffusions; lateral surfaces of head Army Brown (46) above, grading into Straw Yellow (53) in labial regions, and with Olive Brown (278) and Greenish Glauous (271) splotches and suffusions; ventral surface of head Smoky White (261); dorsal surface of neck Drab (19) suffused with Salmon Color (58); dorsal surface of body Drab (19) with Raw Umber (22) longitudinal dorsolateral bands with

Crepe Color (12) speckles; lateral surfaces of body with Sepia (286) transverse bands and Light Bluish Gray (288) speckles; ventral surface of body Smoke Gray (266) with transverse bands composed of Medium Paris White (140) and Pratt's Rufous (72) scales; dorsal surfaces of limbs Drab (19) with Olive Horn Color (16) speckles; dorsal surface of tail Drab (19) with Light Bluish Gray (288) and Crepe Color (12) speckles; caudal crest scales Light Bluish Gray (288) with Glaucous (289) suffusions; ventral surface of tail Medium Fawn Color (257), heavily suffused with Carmine (64); iris Orange-Rufous (56)."

Coloration in life of an adult female (SMF 99144) (Köhler et al. 2016:525–526, with color codes in parentheses from Köhler 2012) was: "Dorsal surface of head Grayish Horn Color (286) with a suffusion of Sepia (286), especially on supraoculars; lateral surfaces of head Drab (19) above, grading into Smoky White (261) in labial regions, and with Jet Black (300) blotches; ventral surface of head Smoky White (261); dorsal

surface [sic] of Smoke Gray (267) with Sepia (286) paravertebral and lateral blotches with Pale Buff (1) speckles; ventral surface of body Smoky White (261) with transverse rows of Sepia (286) blotches; dorsal and lateral surfaces of limbs Grayish Horn Color (286) with Sepia (286) splotches and Pale Buff (1) speckles; ventral surfaces of limbs Smoky White (261); dorsal surface of tail Smoke Gray (267) anteriorly, grading into Ground Cinnamon (270) with Sepia (286) chevrons, bordered distally by Smoky White (261); ventral surface of tail Smoky White (261), heavily suffused with Pale Pinkish Buff (3); iris Warm Sepia (40)."

"The almost completely everted hemipenis of SMF 99150 ... is a stout, medium-sized, slightly bilobed organ; sulcus spermaticus bordered by well-developed sulcal lips and opening into a broad concave area at base of apex; distal region of apex covered by large calyces; lower apex has 4–5 large flounces" (Köhler et al. 2016:526).



FIGURE 2. Adult male *Leiocephalus sixtoi* from near the type locality. Photograph by Miguel A. Landestoy.

DIAGNOSIS. Köhler et al. (2016:520–521) indicated that “*Leiocephalus sixtoi* differs from all other congeners except *L. schreibersii*, *L. melanochlorus*, *L. psammmodromus*, *L. inaguae*, and *L. macropus* by the presence of a lateral fold. It differs from *L. melanochlorus*, *L. psammmodromus*, and *L. macropus* in having 3 internasals (vs. 2 in *L. melanochlorus* and *L. macropus* and 4 in *L. psammmodromus*, respectively). It further differs from *L. melanochlorus* and *L. psammmodromus* in having 4 lorilabial scales anterior to the enlarged subocular (vs. 5–6). *Leiocephalus sixtoi* differs from *L. inaguae* in having a U-shaped bony parietal table (vs. V-shaped in *L. inaguae*), 3 or 4 enlarged postcloacal scales in males (vs. 2 in *L. inaguae*), most scales on the snout posterior to the internasal scales rugose to keeled (vs. smooth in *L. inaguae*), and a patternless throat in males, spots on the throat in females (vs. throat with dark streaks and bars in males and females of *L. inaguae*). *Leiocephalus sixtoi* differs from *L. schreibersii* in having the scales of the lateral fold only slightly smaller than adjacent scales (vs. scales of lateral fold distinctly smaller than adjacent scales ...), having prominent caudal crest scales in adult males (vs. caudal crest scales of moderate size, even in very large males in *L. schreibersii* ...), a pattern of dark gray bars on a grayish brown background in the region above the lateral fold (vs. dense turquoise blue mottling with heavy suffusion of red pigment in *L. schreibersii*), a darker dorsal ground color (vs. paler in *L. schreibersii*), and a red iris in adult males (vs. pale grayish blue in adult male *L. schreibersii*). *Leiocephalus sixtoi* differs further from *L. schreibersii* in several osteological characters as follows: in *L. sixtoi* the nasal process of the premaxilla reaches to mid-level of the bony external nares (vs. to level of posterior margin of the bony external nares in *L. schreibersii*), lacking a constriction at the base of the nasal process of the premaxilla (vs. such a constriction is present in *L. schreibersii*), and having a reduced nasal-prefrontal contact that leaves the nasal

processes of the frontal bone exposed (vs. nasal and prefrontal bones in contact, thereby obscuring the nasal processes of the frontal bone in *L. schreibersii*).”

PHYLOGENETIC RELATIONSHIPS. *Leiocephalus sixtoi* forms a clade with Hispaniolan congener *Leiocephalus schreibersii* and Bahamian *Leiocephalus inaguae*, with all three taxa sharing the presence of a lateral fold and usually having three internasals and four lorilabial scales anterior to the enlarged suboculars (Köhler et al. 2016). Although the ranges of *Leiocephalus sixtoi* and *Leiocephalus schreibersii* are quite proximate, the considerable genetic difference (12% at cytochrome b) and diagnostic morphological traits indicate that the two clades are reproductively isolated (Köhler et al. 2016) (see also **Remarks**).

CONSERVATION STATUS. This species has not been assessed for the IUCN Red List of Threatened Species. With a small and restricted distribution, further studies were recommended “to determine if its habitat and survival are threatened” (Köhler et al. 2016:528).

PUBLISHED DESCRIPTIONS. The only published description was the original published by Köhler et al. (2016).

ILLUSTRATIONS. **Color photographs** of the holotype (lateral view of the head and entire animal in life; dorsal, lateral, and ventral views of the entire specimen and of the head; dorsal region, flank, and midventer), paratypes (whole body and ventral views of a male and two females), cranial osteology (dorsal, lateral, and ventral views of the cranium; a lateral view of the right mandible; shape and extension of the nasal process of the premaxilla and frontal bones), region of the lateral fold, lateral surface of the tail, hemipenes (sulcate and asulcate views), and habitat at the type locality were published

by Köhler et al. (2016). Color photographs were published by Hedges (2019), iNaturalist (2019), Kwet (2017), and López (2018).

DISTRIBUTION. *Leiocephalus sixtoi* is known only from the vicinity of the type locality (Köhler et al. 2016; Meiri et al. 2018), where the habitat consists of sandy dunes and tropical dry forest (Köhler et al. 2016). The distribution was mapped by Köhler et al. (2016) and Hedges (2019); maps of sampling sites or observations were presented by Gifford (2008) and iNaturalist (2019).

FOSSIL RECORD. None.

PERTINENT LITERATURE. In addition to the description of the divergent lineage by Gifford (2008) and the original description by Köhler et al. (2016), *Leiocephalus sixtoi* was included in publications by Hedges (2019: checklist), Hedges et al. (2019: checklist), Kwet (2017: list of new species described in 2016), Meiri et al. (2018: list of lizard species with exceedingly small ranges), Midtgaard (2019: checklist), Noël (2019; list of new species described in 2016), and Uetz et al. (2019: checklist and summary of known information). A news report describing the species' discovery was provided by Florentino (2016) and an article featuring Sixto J. Incháustegui noted that the species had been named in his honor (López 2018).

REMARKS. Because the lizards now assigned to *Leiocephalus sixtoi* were considered conspecific with *Leiocephalus schreibersii* until the formal description of the former (Köhler et al. 2016), some of the literature pertaining to *Leiocephalus schreibersii* might apply to *Leiocephalus sixtoi*. A summary of the literature pertaining to *Leiocephalus schreibersii* prior to 1995 was provided by Schreiber et al. (1995)

A deeply-divergent mtDNA lineage allied with *Leiocephalus schreibersii* was discovered near Las Salinas, Dominican Republic by Gifford (2008). The divergence between the

Las Salinas lineage and two other lineages of *Leiocephalus schreibersii* was hypothesized to have occurred during the late Miocene, ca. 8.2 mya (95% CI = 6.9–9.6 mya), and “likely represents an unrecognized species” (Gifford 2008:156).

The capacity to curl the tail is variable in the genus (despite the common name) and *Leiocephalus schreibersii* does not curl its tail (Schreiber et al. 1995). Due to the general similarity in appearance and the close relationship, we suspect that *Leiocephalus sixtoi* does not curl its tail as well.

ETYMOLOGY. The specific name “is a patronym honoring our friend and colleague Sixto Incháustegui, who has contributed substantially to our knowledge of Hispaniolan amphibians and reptiles. Sixto is professor at the Universidad Autónoma de Santo Domingo, Dominican Republic, where he teaches herpetology and history of biology. For more than 35 years, he has been involved as a major player in biological research and nature conservation on a national and international level” (Köhler et al. 2016:526).

ADDITIONAL VERNACULAR NAMES. English common names used for *Leiocephalus sixtoi* in the literature include “Hispaniolan Dune Curlytail” (Hedges 2019; Hedges et al. 2019) and “Dune Curlytail” (Midtgaard 2019). German common names used for this species include “Salinas-Maskenleguan” (Fotolulu 2018) and “Dünen Rollschwanzleguan” (Midtgaard 2019). “Klit-krølhaleleguan” was used as the Danish common name by Midtgaard (2019).

In some parts of the Dominican Republic, curly-tailed lizards are called “Mariguanita” (the meaning is uncertain) or “El Lagarto de Cola Rizada” (= curly-tailed lizard) (Rey 2017); however, in the area around Baní, the name “Come Maíz” (= corn-eater) is used (M. A. Landestoy, personal communication), but these names are applied to all species of *Leiocephalus*. “Rana” (or, more rarely “Rano”), the Spanish word for frog, is widely used, espe-

cially in the southern Dominican Republic, for any small lizard (M. A. Landestoy, personal communication).

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