



COMUNICACIÓN BREVE

## New records for *Gymnophthalmus underwoodi* (Squamata: Gymnophthalmidae) suggest another entry pathway on eastern Cuba

*Nuevos registros de Gymnophthalmus underwoodi (Squamata: Gymnophthalmidae) sugieren otra vía de entrada a Cuba oriental*

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Non-native species are among the top three causes of biodiversity loss after the destruction and modification of habitats by human activities (McGeoch et al., 2010; Simberloff and Rejmánek 2011, Powell et al., 2011). Invasive species reduce the abundance and richness of native biota mainly through predation, competition, and decreasing genetic diversity through hybridization (Kraus 2009). The Caribbean islands are considered a global biodiversity hot spot for conservation based on their extraordinary species richness and high levels of endemism (Myers et al., 2000; Smith et al., 2005; Wege et al., 2010). The Cuban archipelago achieves a 95.4% endemism in amphibian species and an 80% endemism in reptile species (Rodríguez Schettino et al., 2013, Rivalta et al., 2014).

Invasive species are considered the principal threat for reptile conservation in the Caribbean islands (Böhm et al., 2013). In the last decade, non-native reptile species have been reported in the Cuban archipelago (Alfonso et al., 2012; Díaz 2014; Díaz and Cádiz 2014) in which it is uncertain how they would affect native populations. Recently, Borroto et al. (2015) documented a total of 21 reptile species introduced to Cuba in which 10 had established populations and eight became invasive.

The first record in the Greater Antilles for the Smooth-scaled Worm Lizard *Gymnophthalmus underwoodi* Grant 1958 was reported by Scantlebury et al. (2010) from the easternmost part of Dominican Republic, followed by Alfonso et al. (2012, fig. 1a-b) who reported this species from Santiago de Cuba (southeastern Cuba). This species has been observed inhabiting open and sunny places associated with leaf litter and grass. *Gymnophthalmus underwoodi* has also been reported in anthropogenic habitats like houses, gardens, and agricultural areas (Henderson and Powell 2009; Alfonso et al. 2012). Here we reported five new locations for the Smooth-scaled Worm Lizard on southeastern Cuba, suggesting a new introduction pathway.

During a herpetological survey in Guantánamo City (southeastern Cuba), in December 2016, an adult *Gymnophthalmus underwoodi* (ALF-529, SVL =

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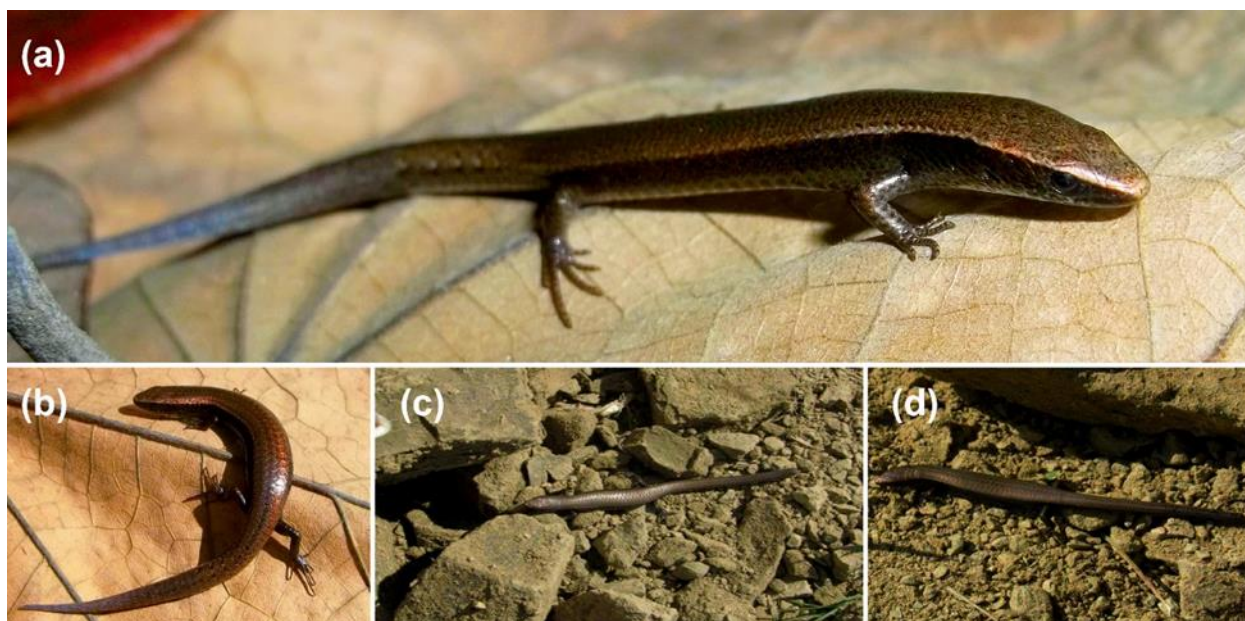
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41.7 mm) was found on the ground between removed rocks in a garden (20°8'21.38"N and 75°12'5.75"W, fig. 1c-d). The species was identified by the first author and confirmed by Luis M. Diaz (Curator of Herpetology, MNHNCu) based on photographs. Further observations were made in January 2017 on Guantanamo City (Reperto Caribe: 20°9'50.07"N, 75°12'47.87"W; Reperto Obrero: 20°9'25.87"N, 75°11'20.31"W) and based on the previous record from Santiago de Cuba harbor (Alfonso et al. 2012) we decided to survey two small towns (Paraguay: 20°3'22.37"N, 75°8'25.93"W; Caimanera: 19°59'17.69"N, 75°9'7.97"W) nearby Guantanamo Bay (Cuban territory).

Additional individuals were observed actively moving around leaf litter and trash in backyards between 1000 and 1400 h. in Reperto Caribe (n=2) and Reperto Obrero (n=1) (Guantanamo City). However, we failed to catch them as they quickly fled towards small cracks in the ground next to the building. Subsequent observations were made in Paraguay and Caimanera. In both cases intense search was focused under leaf litter next to buildings and/or gardens and only one individual for each locality was observed

(1ind./3.5h, photographic vouchers ALF-7231 and ALF-7238). Voucher specimen ALF-529 (captured on Guantanamo City) was in a gravid with two vitellogenic eggs measuring 1.9 x 2.1 mm (right) and 2.2 x 2.5 mm (left), both were higher in the abdominal cavity. Stomach contents of the same specimen suggest a recent ingestion as prey items were almost intact. Diet contents consisted of three hymenopterans (2 *Solenopsis geminata*, 1 *Pheidole* sp.) and one homopteran (Fam: Pseudococcidae). Our results related with stage of pregnancy and stomach contents for the Guantanamo city voucher specimen were similar to those reported by Alfonso et al. (2012) from the introduced population on Santiago de Cuba province.

This second report of *Gymnophthalmus underwoodi* in eastern Cuba suggests a rapid human-mediated colonization by this lizard in the last five years and success based on reproductive modality. We suggest two hypotheses for these new introduction records into the Guantanamo province; first one could have occurred from the populations of Santiago de Cuba via shipments by road between both cities, or a second pathway from Caimanera harbor and Paraguay town and subsequently introduced to



**Figure 1.** a–b Adults of *Gymnophthalmus underwoodi* from Santiago de Cuba City, Cuba. c–d Adult of *G. underwoodi* from Guantanamo City, Cuba. Photographs: Yasel U. Alfonso (a–b) and Zadierik Hernández (c–d).

**Figura 1.** a-b Adulto de *Gymnophthalmus underwoodi* de la ciudad de Santiago de Cuba, Cuba. c-d Adulto de *G. underwoodi* de la ciudad de Guantanamo, Cuba. Fotografía: Yasel U. Alfonso (a–b) y Zadierik Hernández (c–d).



**Figure 2.** Distribution of *Gymnophthalmus underwoodi* on southeastern Cuba. Red circles indicated population reported by Alfonso et al. (2012) and blue circles represents new records from Guantánamo province. 1: Santiago de Cuba city, 2: Guantánamo city, 3: Paraguay town and 4: Caimanera town. Grey line represent division between province and yellow polygon correspond to the US Naval Base perimeter.

**Figure 2.** Distribución de *Gymnophthalmus underwoodi* en Cuba oriental. Los círculos rojos indican las poblaciones reportadas por Alfonso et al. (2012) y los azules representan los nuevos registros de la provincial de Guantánamo. 1: Ciudad de Santiago de Cuba, 2: ciudad de Guantánamo, 3: Poblado Paraguay y 4: Poblado de Caimanera. La línea gris representa la división entre provincias y el polígono amarillo corresponde al perímetro de la Base Naval de EEUU.

Guantánamo city via shipments. Once the species has established it's appear to have a rapidly spread through the city. Future observations should focus on new surveys of towns nearby the Cuban territory of Guantánamo Bay, as well as the US Naval Base, as potential introduction pathways.

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