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**First records for Cozumel Island, Quintana Roo, Mexico:
Eleutherodactylus planirostris (Anura: Eleutherodactylidae),
Trachycephalus typhoni (Anura: Hylidae), and
Indotyphlops braminus (Squamata: Typhlopidae)**

Cozumel is an oceanic island of coralline origin located 17.5 km off the Yucatan Peninsula in the Caribbean Sea (Romero-Nájera et al., 2007). The island is the largest in the Mexican Caribbean Sea, and is characterized by a humid tropical climate, with a mean annual temperature of 25.5°C and mean annual rainfall of 1,505 mm (Cuarón, 2009). As of the year 2000 natural vegetation covered roughly 90% of the island, which mainly was comprised of semi-evergreen tropical forest (Cuarón, 2009).

Cozumel contains more endemic taxa than any other island in Mexico, and is noteworthy for its vertebrate endemism (28 taxa). One of the endemic taxa is the Cozumel Whiptail Lizard, *Aspidoscelis cozumela*, whose morphological and karyological differentiation from the closely-related mainland *A. maslini* suggests their respective specific status (Manríquez-Morán et al., 2014). Unfortunately, in the last few decades several invasive animal species have been introduced on the island, including mice, rats, and feral dogs and cats (Cuarón, 2009). Among the invasive species are the reptiles *Anolis (Norops) sagrei*, *Boa imperator*, *Hemidactylus frenatus*, and *H. turcius* (López-González and González-Romero, 1997; Cuarón, 2009; Farr, 2011; Vázquez-Domínguez et al., 2012).

During fieldwork conducted in Cozumel from 12 to 19 December 2015, we collected three specimens of the chirping frog *Eleutherodactylus planirostris*, two of the treefrog *Trachycephalus typhoni*, and one of the blindsnake *Indotyphlops braminus*. These constitute the first published records of these non-native species from the island. The specimens were deposited in the herpetological collection of the Museo de Zoología “Alfonso L. Herrera,” Facultad de Ciencias, Universidad Nacional Autónoma de México, Mexico (MZFC).

We collected a juvenile of *E. planirostris* (MZFC 30039; Fig 1A) in chit palm forest on the east coast of the island (20.40401N, 86.85809W; WGS 84; elev. 4 m) on 13 December 2015 at ca. 2100 h, and two adults (MZFC

30040–30041) in tropical forest on the west coast of the island near a harbor just north of the town of San Miguel (20.52878°N, 86.93867°W, WGS 84; elev. 7 m) on 15 December 2015 at ca. 2200 h. Both sites had a rocky substrate with abundant crevices, and the specimens were found active on the leaf litter. The Greenhouse Frog, *E. planirostris*, is native to Cuba, the Bahamas, and the Cayman Islands, but it has been introduced to Grenada, Guam, Honduras, Jamaica, Mexico, the Miskito Cays of Nicaragua, the Turks and Caicos Islands, Panama, and the United States, including Hawaii (see Cedeño-Vázquez et al., 2014, and references therein). The records of *E. planirostris* closest to ours are those from Playa del Carmen, Quintana Roo, Mexico (Cedeño-Vázquez et al., 2014), ca. 17.8 km (straight line distance) from the town of San Miguel. This species probably was introduced to Cozumel from Playa del Carmen, since ferries from there are the main entryway into the island. Although we only collected three specimens, we observed numerous individuals of this species moving about in leaf litter at the collecting sites. Thus, reproducing populations of *E. planirostris* apparently are present on the eastern and western coasts of Cozumel.

We found two specimens (MZFC 30045–30046) of *Trachycephalus typhonius* on branches ca. 2 m above the ground in semi-evergreen tropical forest, along a dirt road in Punta Norte, ca. 6 km N of the town of San Miguel (20.55411°N, 86.91338°W; WGS 84; elev. 4 m), on 17 December 2015 at ca. 2350 h. One of the specimens was a juvenile and the other a sub-adult, both of undetermined sex. The Milky Treefrog, *T. typhonius*, is common and widespread in the Yucatan Peninsula, including Quintana Roo (Lee, 1996), but published records for Cozumel are absent. Jorge Armín Escalante Pasos uploaded an observation of this species for Cozumel on 7 July 2014 in the iNaturalist online project, and Juan Carlos García Morales did the same on 10 January 2015. This work, however, represents the first published record of this species from the island. Given that the area has been studied comprehensively in the past and *T. typhonius* has not been reported in previous publications, this species likely was introduced to Cozumel in recent years.

We found an adult specimen of *Indotyphlops braminus* (MZFC 30042; Fig. 1B) dead on a sidewalk where apparently it had been exposed to sunlight for several hours in the town of San Miguel, at the intersection of “Avenida 4 Norte” and “Avenida 20 Norte” (20.509967°N, 86.9451°W, WGS 84; elev. 7 m), on 18 December 2015 at ca. 1600 h. The snake probably came from a garden in one of the surrounding houses, since plant nursery trade is the main path of dispersal for this species (Díaz and Cádiz, 2014). The Brahminy Blind Snake, *I. braminus*, is native to Southeast Asia, but due to human-aided dispersal it is now the most widespread snake species in the world (Díaz and Cádiz, 2014). This species was reported from Cancún, Quintana Roo, Mexico, ca. 75 km (straight line distance) from the town of San Miguel, by Christian Amador García on the “Weeds Across Borders 2012” meeting, and the observation was added to the iNaturalist

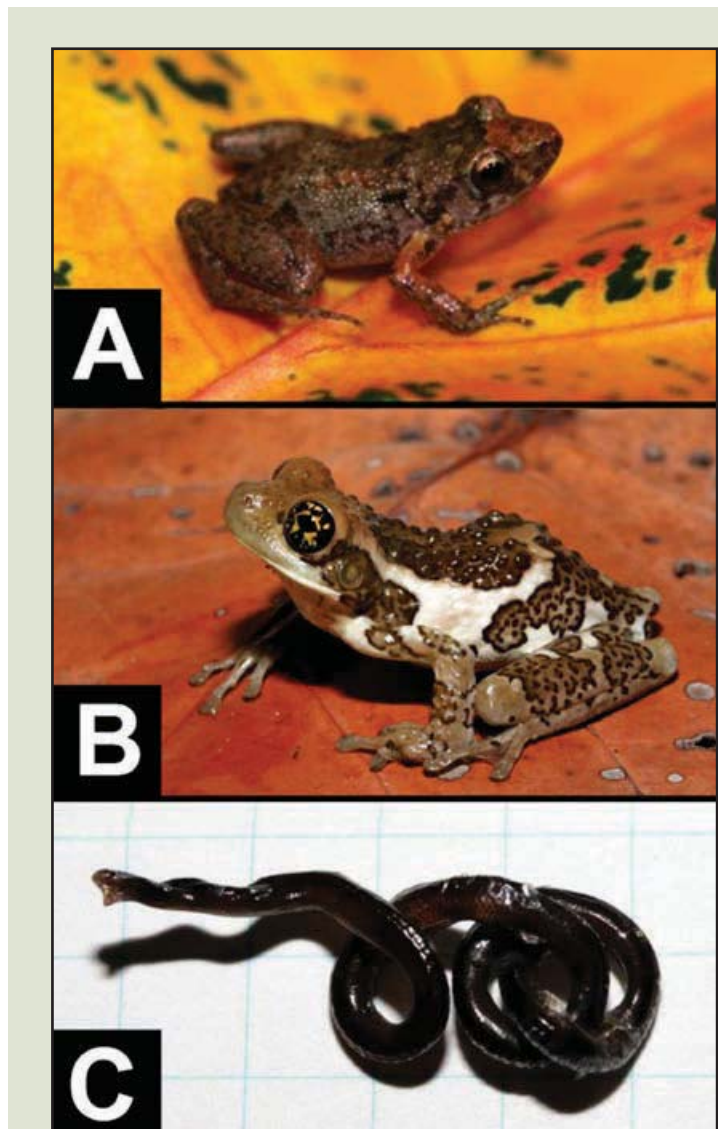


Fig. 1. Species reported herein for Cozumel, Quintana Roo, Mexico: (A) *Eleutherodactylus planirostris* (MZFC 30039); (B) *Trachycephalus typhonius* (MZFC 30045); and (C) *Indotyphlops braminus* (MZFC 30042). © Brittney A. White

online project on 15 May 2015. Even though we only found one specimen, this parthenogenetic species is capable of reproducing and establishing a new population on the basis of a single individual (Díaz and Cádiz, 2014).

The new records provided here for the extensively studied Cozumel highlight the failure of ongoing control measures in preventing the introduction of exotic species, even though their presence has been recognized as a major threat to the native fauna (Cuarón, 2009). Other detected threats are habitat fragmentation, potential introgression in endemic taxa due to the introduction of mainland congeners, introduction of foreign diseases, collecting of individuals for the pet trade, and hunting (Cuarón, 2009). More rigorous regulations over the movement of people and goods in and out of the island might be necessary in order to protect Cozumel's biological wealth.

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