



## INTRODUCED SPECIES

# First Record of the Mediterranean House Gecko, *Hemidactylus turcicus* Linnaeus 1758, in the Metropolitan Area of San Luis Potosí, Mexico

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The Mediterranean House Gecko (*Hemidactylus turcicus*) is native to coastal areas of the Mediterranean, where it is widespread across southern Europe and the Levant and more sporadically in North Africa (Sindaco and Jeremčenko 2008; Rato et al. 2011). Its introduction in the Americas has been well documented (Livo et al. 1998; Hare 2006; Kleopfer et al.

2006; Reed et al. 2006; Platt et al. 2008; Kraus 2009), and has been the result of anthropogenic processes (Lever 2003; Locey and Stone 2006). It has been widely introduced in the United States, initially in Florida (Fowler 1915), but subsequently throughout the southern states and more recently into the central Midwest (Thornhill 1994; Hare 2006) and Northeast

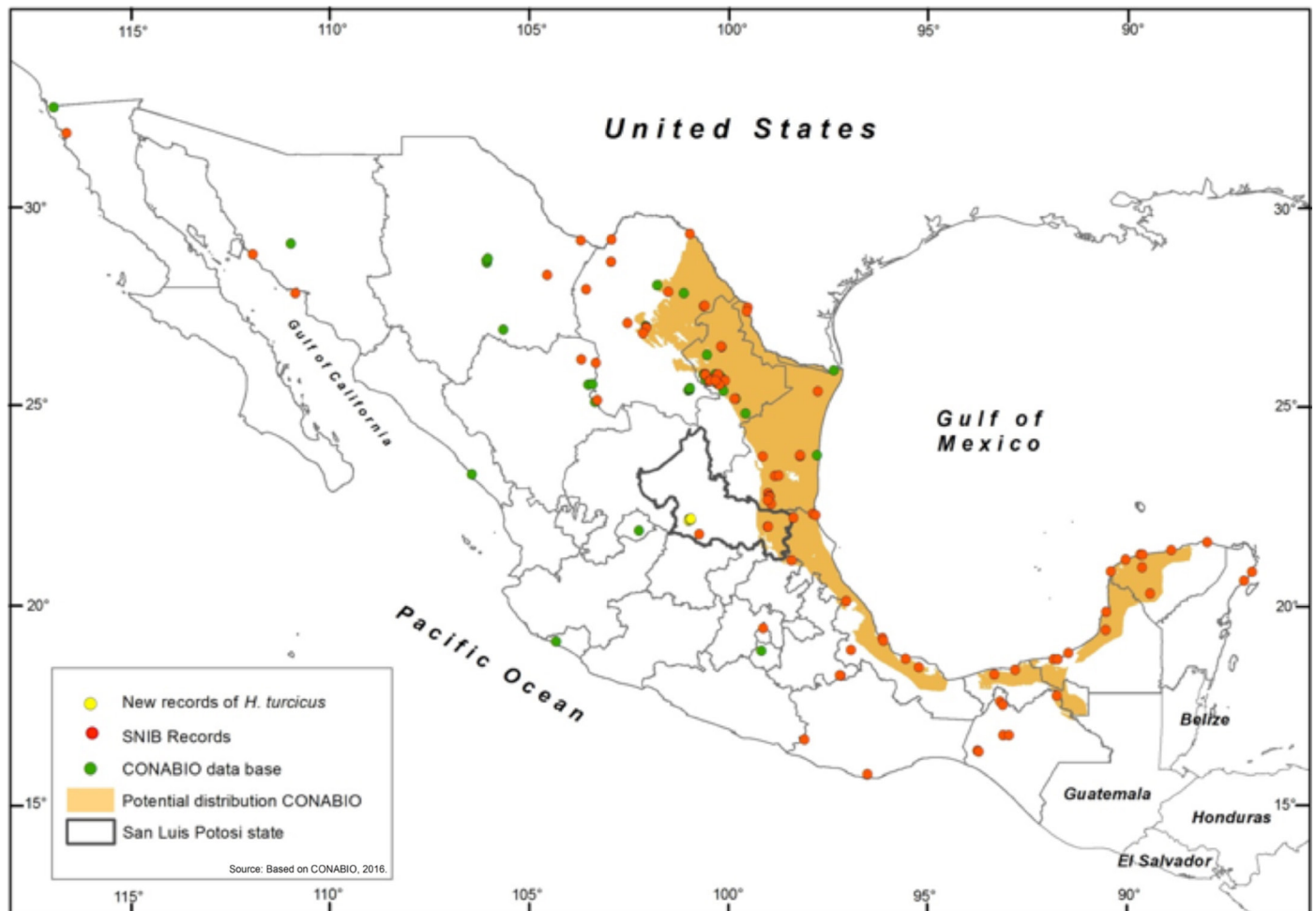


Fig. 1. Distribution of the Mediterranean House Gecko (*Hemidactylus turcicus*) in Mexico.

(Norden and Norden 1991; Bauer 2000). It also has reached South America (Argentina, Chile), Central America (Panama), and the Caribbean (Cuba and Puerto Rico) (Lee 2000; Townsend and Krysko 2003; Kraus 2009). In Mexico, it has been recorded all along the Gulf Coast, including the

states of Tabasco, Veracruz, Campeche, Quintana Roo, and Yucatan (Sáenz 1996; Lee 1996; Álvarez-Romero et al. 2005, 2008a), and recently it has been documented in the northern states of Chihuahua, Sonora, and Coahuila (Lemos-Espinal et al. 2015; CONABIO 2016). This widely introduced species has achieved a broad but scattered distribution elsewhere in the country (Fig. 1), and continues to colonize new areas.

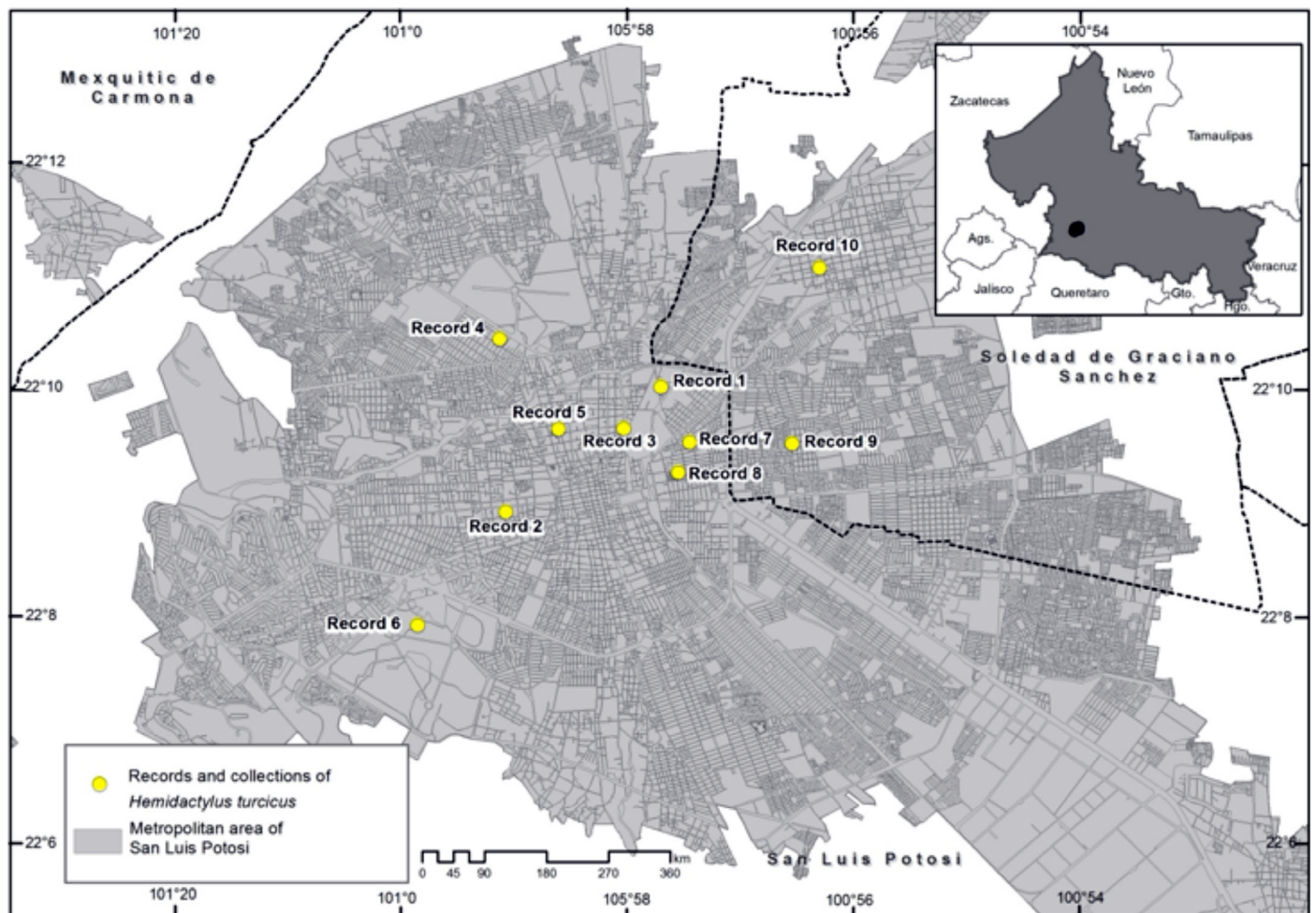
Low predation pressure, minimal interspecific competition, and high survival rates due to its life history attributes have been recognized as factors that facilitate the worldwide dispersal of this gecko, allowing its propagation in a wide variety of areas and environmental conditions (Selcer 1986; Punzo 2005; Farallo et al. 2009; Araujo et al. 2011).

Frequently seen on buildings in both its native and non-native range, this gecko is most frequently associated with human settlements (Fig. 2). It is considered a generalist species, with a broad arthropod-based diet, including crustaceans, centipedes, arachnids, and especially insects that are abundant in these urban landscapes (Sáenz 1996; Farallo et al. 2009; Bauer et al. 2010).

Biological invasion is a well known critical aspect of global change, mediating the expansion process of animals



**Fig. 2.** An adult Mediterranean House Gecko (*Hemidactylus turcicus*) found in a manmade construction in the metropolitan area of San Luis Potosí. Photograph by Ulises Pineda-Manzano.



**Fig. 3.** Records of Mediterranean House Geckos (*Hemidactylus turcicus*) in the metropolitan study area of San Luis Potosí.

and plants on a global scale (Álvarez-Romero et al. 2008). The negative effects of non-native species introduction may lead to changes in ecosystem dynamics at both the population and individual levels (Bright 1998; Huxel 1999; Parker et al. 1999; Manchester and Bullock 2000; Punzo 2005).

The current distribution of *H. turcicus* in San Luis Potosí is poorly documented. According to the National Biodiversity Information System (SNIB) (CONABIO 2016), records are known from three localities in the eastern portion of the state, within the Gran Sierra Plegada and Carso Huasteco, and only one record in Santa Maria del Rio municipality. We herein report the first record of *H. turcicus* beyond these known geographic limits, documenting its occurrence in the urban area of San Luis Potosí in the southwestern part of the state.

### Methods

The study area (22°0'56"–22°13'5"N, 100°51'32"–101°2'46"W) is located between the municipalities of San Luis Potosí and Soledad de Graciano Sanchez, which encompass the metropolitan area of the city of San Luis Potosí (Fig. 3). The estimated total population of the city is 1,097,906. It is the most important urban area in the state and the site where most commercial and industrial activities are carried out. The climate in the area is predominantly temperate and arid, with a mean annual temperature of 25.3 °C and mean

annual precipitation of 1,000 mm (García – CONABIO 1998; INEGI 2011).

We initially searched the data sets of the National Biodiversity Information System (SNIB) and the National Commission for the Use and Knowledge of Biodiversity (CONABIO 2016) in order to determine where specimens of *H. turcicus* had been recorded. Representative specimens were collected to verify taxonomic identification and serve as vouchers (Sáenz 1996; Álvarez-Romero et al. 2008; Rato 2015). Anecdotal observational data were collected through semi-structured interviews with inhabitants of different areas of the city in order to determine if there was evidence of its historic presence. Each record was categorized by date, geographic location, and source of evidence (Table 1).

### Results and Discussion

We were able to document *Hemidactylus turcicus* at 10 locations, two vouchered by new collections and eight by anecdotal observations. Two adults were collected at one site and two juveniles at another. The sex of the adults was determined by examining the abdomen and tail base (Bauer 2010; Fig. 4). The other eight records were based on 20 semi-structured interviews with randomly selected people (adults only) within the urban area, and one of these was corroborated by a photographic voucher (Table 1).

**Table 1.** Records of Mediterranean House Geckos (*Hemidactylus turcicus*) obtained during the study.

ID	Date	Coordinates	Municipality	Observations
1	June 2016	22°10'4.91"N 100°58'0.48"W	San Luis Potosí	Anecdotal observation (Fig. 6)
2	November 2016	22° 8'58.78"N 100°59'22.69"W	San Luis Potosí	Two juveniles (undetermined sexes)
3	November 2016	22° 9'43.00"N 100°58'20.17"W	San Luis Potosí	Two adults (1 male and 1 female)
4	December 2016	22°10'30.35"N 100°59'25.95"W	San Luis Potosí	Anecdotal observation
5	December 2016	22° 9'42.53"N 100°58'54.68"W	San Luis Potosí	Anecdotal observation
6	January 2017	22° 7'58.77"N 101°0'9.25"W	San Luis Potosí	Anecdotal observation
7	January 2017	22° 9'35.53"N 100°57'45.12"W	San Luis Potosí	Anecdotal observation
8	January 2017	22° 9'19.65"N 100°57'51.11"W	San Luis Potosí	Anecdotal observation
9	February 2017	22° 9'35.01"N 100°56'50.72"W	Soledad de Graciano Sanchez	Anecdotal observation
10	February 2017	22° 11'8.04"N 100°56'36.17"W	Soledad de Graciano Sanchez	Anecdotal observation





**Fig. 4.** Female Mediterranean House Gecko (*Hemidactylus turcicus*) determined by an examination of the tail base. Photograph by Ulises Pineda-Manzano.

Mediterranean House Gecko as part of the national management strategy for control and eradication of invasive species implemented in Mexico (CONABIO 2016; DOF 2016).

We recommend that resident populations of *H. turcicus* continue to be monitored to track its population status and possible spread and to evaluate the potential negative impacts of this gekkonid as an introduced species in Mexico.

#### Acknowledgements

We thank the local people involved in this study for observations and evidence.



**Fig. 5.** Juvenile Mediterranean House Gecko (*Hemidactylus turcicus*) collected on the floor of a building in the city. Photograph by Israel de Jesús Rodríguez Elizalde.

We found geckos inside households, where they showed a preference for inaccessible areas like attics, closets, storage rooms, and cracks in walls (Fig. 5), consistent with the edificarian situations that have been reported as the primary habitat for this species (Davis 1974; Arnold 1984; Trauth 1985; Selcer 1986; Punzo 2001).

Anecdotal records suggest that *H. turcicus* has occupied the city of San Luis Potosí for approximately 20 years (Fig. 6), and confirm that the species has expanded its range considerably beyond the previously presumed limits (Álvarez-Romero et al. 2008).

Although *Hemidactylus turcicus* is now a common species in many regions of Mexico, recent information about its distribution in other localities is undocumented, and it is certainly more widely distributed than published data suggest. That the species may have been present in the city of San Luis Potosí for as long as 20 years without coming to the attention of herpetologists speaks to both its localization in areas of introduction and to the ease with which it can go undetected unless targeted searches are conducted. This study is an attempt to contribute baseline data on the distribution of the



**Fig. 6.** Photographic evidence of Mediterranean House Geckos (*Hemidactylus turcicus*) obtained from local people in central San Luis Potosí (Record 1).

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