

## Establishment of the Common House Gecko, *Hemidactylus frenatus* Duméril & Bibron, on Saint Lucia

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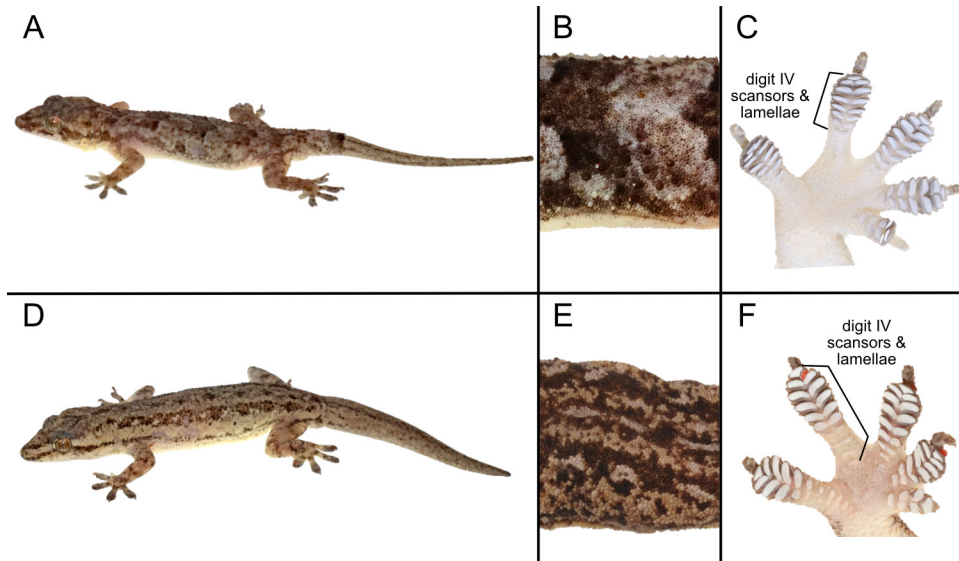
**Edited by:** S. Blair Hedges. **Date of publication:** 21 February 2022.

**Citation:** Griffing AH, Griffing DH, Lesmond S, Gamble T (2022) Establishment of the Common House Gecko, *Hemidactylus frenatus* Duméril & Bibron, on Saint Lucia. *Caribbean Herpetology*, 83, 1–3.

**DOI:** <https://doi.org/10.31611/ch.83>

House geckos of the genus *Hemidactylus* are well known as some of the most widespread and successful lizard invaders following anthropogenic introductions to novel environments (Agarwal *et al.* 2021). In particular, the Indo-Pacific Gecko (*Hemidactylus garnotii* Duméril & Bibron), West African House Gecko (*Hemidactylus angulatus* Hallowell), Mediterranean Gecko (*Hemidactylus turcicus* [Linnaeus]), Tropical House Gecko (*Hemidactylus mabouia* [Moreau de Jonnés]), and the Common House Gecko (*Hemidactylus frenatus*) have collectively established themselves across North, Central, and South America (Weterings & Vetter 2018); common names from Hedges *et al.* (2019). In the majority of Caribbean islands, African *H. mabouia* was introduced and established stable populations in the seventeenth century (Agarwal *et al.* 2021); however, new populations are still being reported (Griffing & Bauer 2016). In recent years, Asian *H. frenatus* sightings have been reported from Caribbean islands, including Cuba (Powell *et al.* 2011; Díaz 2014), Hispaniola (Scantlebury *et al.* 2010), Puerto Rico (Sánchez 2018), Curaçao (Behm *et al.* 2019), and most recently Dominica (Brisbane *et al.* 2021). The report of *H. frenatus* in Dominica was the first note of this species in the Lesser Antilles. Brisbane *et al.* (2021) searched iNaturalist to identify an additional putative cases from the Lesser Antilles: a record from Saint Lucia (iNaturalist 2022). However, the angle of the observation and overall quality prevented them from definitively confirming the identity as *H. frenatus*. Herein we provide a report that not only is *H. frenatus* present in Saint Lucia, it is well-established in several parts of the island.

We first observed *Hemidactylus frenatus* in the southeastern portion of Pigeon Island, Gros Islet, Saint Lucia (14.092968, -60.962393) on 13 January 2022 at 12:27 h. This adult was spotted on the side of a small rock under the shade of a large almond tree (*Terminalia catappa*). Initial attribution to *H. frenatus*, instead of *H. mabouia*, which is known from Saint Lucia, was based on dorsal color pattern and absence of large, dorsal tuberculate scales (Krysko & Daniels 2005; Daltry 2009; Fig. 1). We found two additional individuals from Pigeon Island on 14 January 2022 and 16 January 2022 by similar means. We observed more *H. frenatus* in the southern portion of the island. In the western side of Sandy Beach, Vieux Fort, Saint Lucia (13.731158, -60.940570) on 18 January 2022 between 18:40 h and 20:00 h, we observed 15 *H. frenatus* on buildings, coconut palms (*Cocos nucifera*), and sea grapes (*Coccoloba uvifera*). We collected two specimens from this population (MPM RA34077, MPM RA34078), preserved their livers in RNA later and fixed their remaining bodies in 80% EtOH. On 19 January 2022, we observed six individuals in a recreation park near UVF International Airport, Vieux Fort, Saint Lucia (13.729162, -60.944682) between 15:50 h and 16:30 h in crevices of large trees and under leaf litter. On the same day, we observed 16 individuals in large trees near Hellene, Micoud, Saint Lucia (-13.776523, -60.909681) between 17:00 h and 17:30 h. We then observed 19 individuals on the eastern side of Sandy Beach, Vieux Fort, Saint Lucia (13.732078, -60.939000) between 18:00 h and 19:00 h.



**Figure 1.** Voucher specimens illustrating diagnostic differences between *Hemidactylus mabouia* (A–C; MPM RA34076) and *Hemidactylus frenatus* (D–F; MPM RA34078), collected from the same locality in Vieux Fort, Saint Lucia. Lateral views of whole live specimens (A, D). Dorsal views of the trunk illustrating the presences of large tuberculate scales in *H. mabouia* and absence of such scales in *H. frenatus* (B, E). Plantar views of the right pes illustrating scansors of digit IV are not present along the full length of the digit in *H. mabouia* while they are present along the full length of the digit in *H. frenatus* (C, F). Image in panel E used with permission from Stuart Nielsen.

In total, we observed 59 *H. frenatus* in Saint Lucia, spanning nearly the entire longitude of the island. Individuals ranged from hatchlings to adults. These observations suggest that *H. frenatus* is well-established in Saint Lucia and likely has been for years. *Hemidactylus frenatus* and *H. mabouia* superficially look similar and it is likely *H. frenatus* were mistaken for *H. mabouia*, which has been established in Lesser Antilles for hundreds of years (Agarwal *et al.* 2021). *Hemidactylus frenatus* can be readily distinguished from *H. mabouia* by their dorsal anterior-posterior striped pattern, small numbers or absence of tuberculate scales on the dorsum, and adhesive scansors which sit along the entire length of the underside of digit IV (Krysko & Daniels 2005; Powell *et al.* 1998a; Fig. 1).

Several invasive gecko species, particularly *H. frenatus*, have been implicated in the decline of native geckos due to a combination of predation, competition, and introduction of parasites (e.g. Petren & Case 1996; Cole *et al.* 2005; Perella & Behm 2020). This is a particularly concerning prospect, as areas we surveyed were previously inhabited by native Turniptail Geckos (*Thecadactylus rapicauda* [Houttuyn]; Lesmond, pers. obs.); however, our search yielded no individuals of *T. rapicauda*. *Hemidactylus frenatus* has also been implicated in outcompeting *H. mabouia* in some cases (Powell *et al.* 1998b; Sánchez 2018). The *H. frenatus* we found were often on the same structure or branch with *H. mabouia*; although, we always found fewer *H. mabouia* than *H. frenatus*. This suggests *H. frenatus* is potentially outcompeting *H. mabouia* as well.

## Acknowledgments

We thank the Ministry of Agriculture, Fisheries, Physical Planning, Natural Resources and Co-operation Forestry Department for granting permission to AHG to conduct research in Saint Lucia. In particular, we thank Mr. Pius Hayes for assistance with the permitting process. We also gratefully acknowledge support from the Hartwick College Office of Global Education.

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