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

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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 [Linneaus]), Tropical House Gecko (Hemidactylus mabouia [Moreau de Jonnès]), 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. Six images. The top row, from left to right, has three images labeled A, B, and C. The bottom row, from left to right, has three images labeled D, E, and F. More detail in the caption below.

Figure 1. Voucher specimens illustrating diagnostic differences between *Hemidactylus maboula* (A-C; MPM RA34076) and *Hemidactylus frenatus* (D-F; MPM RA34078) collected from the same locality in Vleux 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. maboula* 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. maboula* 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.

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