Herpetofauna of Hog Island, Grenada

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HOG Island is an uninhabited islet (28 ha) with a maximum elevation of 50 m located about 115 m off the southern coast of Grenada (Fig. 1). The mean annual temperature at sea level is 30°C (CCA/IRF, 1991) and the mean annual rainfall for the ten-year period 1992-2001 at Mount Hartman Bay on the adjacent main island was 98.2 ± 13.0 cm. Most of the island is covered by dry forest, which blends into coastal mangrove stands on the leeward shore. A few open fields serve as testament to past use for grazing livestock. A few small, sandy beaches are scattered around the coast. Fishermen and tourists occasionally visit the island.

Neither of the island lists by MacLean et al. (1977) or Corke (1992) included records for Hog Island. In June 2002, we spent 37.5 person hours in two visits (one by day and the other at night) on the island in order to survey the herpetofauna. Voucher specimens are deposited in the Bobby Witcher Memorial Collection (BWMC) at Avila University (06942-7, 07033). All means are presented ± 1 standard error; for all tests, $\alpha = 0.05$.

We found three species of lizards and one frog. *Anolis aeneus* (Polychrotidae) is a xerophilic to mesophilic species of moderate size (Schwartz & Henderson, 1991). Essentially ubiquitous on Grenada, this lizard was common in all but the most open habitats on Hog Island (Plate 1). *Hemidactylus mabouia* (Gekkonidae) often is edificarian, but may be found under planks, loose rocks in open areas, and piles of coastal wrack (Schwartz & Henderson, 1991). We found one individual and calcareous eggshells, probably attributable to the species, under rocks in the forest. *Gymnophthalmus underwoodi* (Gymnophthalmidae) is a small, mesophilic parthenogene found in xeric woodlands, leaf litter, and rocks (Schwartz & Henderson, 1991). Although only recently reported from Grenada (Hardy, 1982; Vanzolini, 1990), the species is common in a variety of habitats. Hog Island individuals were found in leaf litter throughout the dry forest. *Eleutherodactylus johnstonei* (Leptodactylidae) is a moderately sized member of the genus that generally occurs in mesic forests (Schwartz & Henderson, 1991). The species is ubiquitous on Grenada, and one is out of earshot of calling males only in the most intensely developed urban center of St. George's. On Hog Island, individuals were heard throughout the forested areas and along the edges of open fields and sandy beaches.

Somewhat surprising was the apparent absence of three species that are widely distributed on Grenada, all of which are typically easy to find when present. *Anolis richardii* is abundant in all Grenadian habitats, where it typically is syntopic with *A. aeneus* (Schoener & Gorman, 1968; pers.

observ.). *Ameiva ameiva* (Teiidae) has a disjunct distribution on Grenada and is common at few sites. The latter situation may be attributed largely to predation by the mongoose (*Herpestes javanicus*) and feral cats (*Felis domesticus*), neither of which we observed on Hog Island. Other species of West Indian *Ameiva* often are abundant on small satellite islands (e.g., Censky & Powell, 2001). Considering the presence of suitable habitat and the proximity of Hog Island to Grenada, the absence of *A. ameiva* is difficult to explain.

Corallus grenadensis (Boidae) occupies all forested habitats on Grenada to elevations of at least 525 m in which canopy (or crown) cover is continuous (Henderson, 2002). Treeboas would seem eminently capable of reaching Hog Island (Henderson & Sajdak, in press), where apparently suitable habitat occurs. Hog Island, however, is smaller than the smallest island known to harbour *C. grenadensis* (70 ha). Also, because of the absence of the mongoose and feral cats, we had hoped to find ground-dwelling snakes that have been extirpated (e.g., *Clelia clelia*) or are, at best, exceedingly rare (e.g., *Mastigodryas bruesi*) on Grenada proper. In similar fashion, *Alsophis antiguae* has been extirpated from Antigua proper (Henderson et al., 1996), but a population of approximately 100 individuals remains on a small satellite (Smith et al., 2002).

When we compared Hog Island to other islands of comparable size (20-35 ha), Hog Island supported more species (Table 1). When we considered distance to the nearest large island (> 3200 ha), a relationship between distance and the number of species appeared to be evident. Hog Island is closest to a major island and supports the most species, whereas Petit Nevis and Kick 'em Jenny are farther from major islands and have fewer species. However,

Figure 1. Grenada, showing position of Hog Island.

the relationship was not significant (Kendall Rank correlation, Z = -1.54, *P* = 0.12). Burns et al. (1992) and Yeska et al. (2000), working on small Hispaniolan satellite islands, reported similar trends, but their data were equally inconclusive.

Hog Island provided an opportunity to observe *Anolis aeneus* in the absence of *A. richardii* to determine if the absence of a potentially competing congener would affect habitat utilization. We collected data on perch height and perch diametre for two size classes of anoles (Table 2). Because perch characters of lizards on large palms appeared to differ from those that

Island	Area (ha)	Distance to nearest main island (km)	Number of species
Hog Island	28	0.11	4
Petit Nevis	20	8.62	1
Frigate Island	30	2.77	2
Palm Island	35	3.66	1
Kick 'em Jenny	20	6.95	2
Petit St. Vincent	35	4.71	1

Table 1. Number of species recorded from Hog Island and islands of comparable size in the Grenadines (Corke, 1992). 'Main' islands have areas > 3,200 ha.

Size Class	Non-palm Height (cm)	Non-palm Diametre (mm)	Palm Height (cm)	Palm Diametre (mm)	All Height (cm)	All Diametre (mm)
Large Males	147.1 ± 13.5 25–30 *n* = 42	195.2 ± 33.0 10–1000 *n* = 42	363.3 ± 111.6 30–1000 *n* = 9	258.9 ± 26.5 180–450 *n* = 9	185.3 ± 24.5 25–1000 *n* = 51	206.7 ± 27.6 10–1000 *n* = 51
Females / Small Males	114.0 ± 10.5 0–300 *n* = 56	192.1 ± 18.7 15–600 *n* = 56	297.3 ± 72.7 30–750 *n* = 11	264.4 ± 13.9 100–350 *n* = 11	144.1 ± 16.7 0–750 *n* = 67	201.9 ± 15.7 15–600 *n* = 67
All	128.2 ± 8.5 0–430 *n* = 98	193.2 ± 17.9 10–1000 *n* = 98	327.0 ± 62.8 30–1000 *n* = 20	252.0 ± 13.8 100–450 *n* = 20	161.9 ± 14.3 0–1000 *n* = 118	204.1 ± 15.0 10–1000 *n* = 118

Table 2. Mean perch heights and perch diametres, ranges, and sample sizes for two size classes of *Anolis aeneus* on Hog Island.

perched on other types of vegetation, we examined data separately for anoles on palms. In fact, both perch heights and diametres of anoles on palms were significantly larger than those on other types of perches (Mann-Whitney U, Z = -3.21, $P = 0.001$; Z = -3.07, $P = 0.002$; respectively). However, neither perch heights nor diametres of large males differed significantly from those of smaller males and adult females (heights for palms, non-palms, all perches: Z = -0.42, $P = 0.68$; Z = -1.81, $P = 0.07$; Z = -1.77, $P = 0.08$; diametres for palms, non-palms, all perches: Z = -0.04, $P = 0.97$; Z = -1.14, $P = 0.26$; Z = -1.01, $P = 0.31$).

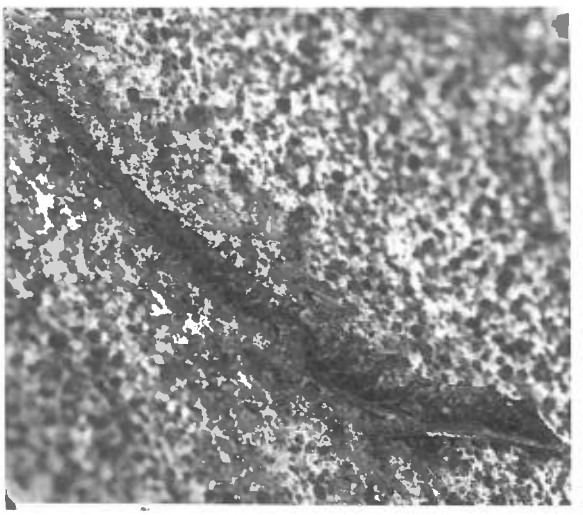

Plate 1. *Anolis aeneus*. Photograph by R. Powell.

In evaluating the ecomorphology of Lesser Antillean anoles, Losos & de Queiroz (1997) considered *A. aeneus* and *A. gingivinus* (of the Anguilla Bank) to be generalists, although Beuttell & Losos (1999) reported that *A. gingivinus* was most similar to trunk-ground ecomorphs. Mean perch heights of *A. gingivinus* on St. Maarten (Losos & de Queiroz, 1997), where the species coexists with *A. pogus*, and of *A. aeneus* from Grenada (Losos & de Queiroz, 1997) are comparable to those presented here (Contingency test, *A. gingivinus*, $\chi 2 = 0.20$, d.f. = 1, $P = 0.68$; *A. aeneus*, $\chi 2 = 0.03$, d.f. = 1, $P = 0.85$). Mean perch diametre of Hog Island *A. aeneus* differed significantly from that of *A. gingivinus* from St. Maarten ($\chi 2 = 11.8$, d.f. = 1, $P = 0.0006$), but not of *A. aeneus* from Grenada ($\chi 2 = 0.80$, d.f. = 1, $P = 0.37$). Neither perch height nor diametre of Hog Island *A. aeneus* varied from those reported by Eaton et al. (2002) for *A. gingivinus* in the one sampled Anguillian habitat characterised by large trees that presumably would supply an abundance of large height and diametre perches (height, $\chi 2 = 0.10$, d.f. = 1, $P = 0.78$, diametre, $\chi 2 = 0.70$, d.f. = 1, $P = 0.41$). Eaton et al. (2002) had sampled six other habitats and had attributed some of the differences in perch characteristics to the varying availability of perches in different habitats. Our own unpublished data for Grenada also suggest that perch characteristics vary considerably according to habitat. Nevertheless, these

ecological data generally support the contention that *A. aeneus* is an ecological generalist (Losos & de Queiroz, 1997; Beuttell & Losos, 1999).

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