

ABSTRACT

Distribution, Abundance and Habitat Use of the Critically Endangered Barbados Leaf-Toed Gecko (*Phyllodactylus Pulcher*)

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The Critically Endangered Barbados leaf-toed gecko (*Phyllodactylus pulcher*) is one of few endemic vertebrate species in Barbados and its distribution, abundance and habitat use is the focus of this study. The total area of occurrence (AOO) of the gecko was 0.18 km² of coastal limestone cliff habitat, distributed across 21 sub-populations. Although new sites of occurrence were found, overall range has contracted since the last assessment in 2014. Unlike the introduced African house gecko (*Hemidactylus mabouia*), the density of *P. pulcher* decreased with proximity to coastal settlements. The estimated AOO was combined with densities at three sites to calculate a total population estimate of ~6,000 (3,780-11,580) individuals, half the 2014 estimate. This lower estimate reflects a predicted reduction in population size and further justifies the conservation status of *P. pulcher* as Critically Endangered. Habitat selected by *P. pulcher* was primarily structurally complex vertical rock surfaces with crevices for daytime refugia, often with shrub vegetation cover. A new method to individually identify geckos by dorsal patterns using photographic identification software was used. Geckos were typically recaptured near to previous points of capture, with small home ranges recorded i.e. 5.2 m². Although less numerous than *H. mabouia* in edificarian habitats, *P. pulcher* had better body condition than *H. mabouia* at all survey sites. The lower body condition of female *H. mabouia* than female *P. pulcher* may be due to the greater clutch size and/or number of clutches/year produced by the former species than the latter. Rates of tail autotomy in *P. pulcher* were high at all sites, but this could not be linked to predation or *H. mabouia* abundance. Data obtained were used to make recommendations on the location, size, and habitat augmentation of a bio-secure area for *P. pulcher*, to protect at least one population in situ against predators and competitors.

Keywords: Area of Occupancy (AOO); density; photographic identification; home range; body condition; tail autotomy; abundance; bio-secure area