The herpetofauna of Barbados: Anthropogenic impacts and conservation status

Angela Fields, Julia A. Horrocks

Department of Biological and Chemical Sciences, The University of the West Indies, Cave Hill Campus, Bridgetown BB11000, Barbados

1 Corresponding author; e-mail: julia.horrocks@cavehill.uwi.edu

Abstract. A maximum of fifteen extant terrestrial species of herpetofauna may be found in Barbados today. Four are endemic, three are native, and eight are introduced or probably introduced. Two lizards, Anolis sagrei and Ameiva ameiva, and two snakes Ramphotyphlops braminus and Mastigodryas bruesi are introductions that have occurred in the last few decades. Two endemics, the snake Liophis perfuscus and the gecko Phylloctyclus pulcher, may be extinct, while new sightings have been made of the endemic fossorial worm snake, Tetracheilostoma carlae. Both amphibian species are abundant and widely distributed; Rhinella marina, being highly invasive. The threats to terrestrial herpetofauna include habitat alteration and loss, deliberate harm, introduced species, and potentially, collection for the pet trade. Three marine turtles, Chelonia mydas, Dermochelys coriacea and Eretmochelys imbricata nest on Barbados. Not previously reported to nest on Barbados, the number of nests made by Chelonia mydas is increasing. Nesting habitat for the large population of hawksbills, Eretmochelys imbricata, on the west and south coasts of the island is threatened by coastal development.

Key words: Amphibians; Barbados; Leptotyphlops carlae; reptiles; sea turtles; snakes Tetracheilostoma carlae.

Introduction

Barbados is a small island (430 km$^2$) of low relief, lying to the east of the Lesser Antilles island chain (N 13°52' W 59°32'). It sits on an accretionary prism, or ridge, formed by the convergence of two tectonic plates; Barbados being the only part of the ridge that was pushed up high enough to allow coral growth and eventually to emerge above sea level. About 85% of the island is composed of a porous Pleistocene coral cap that rises in a series of terraces to the highest point of approximately 340 m. The core of the island dates back 20-50 mya, but the coral cap is probably less than 1 million years old (Speed, 1994; but see Thorpe et al. 2005), making it younger than the neighbouring volcanic islands to the west.
Insights into the herpetofauna extant in Barbados prior to human settlement are provided by Ray’s (1964) descriptions of fossils found at Spring Bay, St. Philip. Early mentions of the island’s post-European colonization herpetofauna are those made by Ligon (1657), Hughes (1750) and Schomburgh (1848), and lists have been provided since by Feilden (1889a, 1889b), Grant (1959), Schwartz and Henderson (1988, 1991), Corke (1992) and Fields and Horrocks (2009). From these lists we know that several species have declined in abundance (e.g., green and hawksbill sea turtles), and that at least two species, a giant Geochelone tortoise and an iguana (Ray 1964), and possibly five species, if Liophis perfuscus, Phyllocaucus pulcher and Mabuya mabouya are included, have been extirpated or have gone extinct. Several new species have also been introduced in the last fifty years (e.g., Underwood et al., 1999; Watson, 2008). Several articles have been written on the amphibians and reptiles of Barbados, particularly on the whistling frog (e.g., Ovaska 1991a, 1991b, 1992), snakes (e.g., Underwood et al., 1999; Hedges, 2008), and the sea turtles (e.g., Horrocks and Scott, 1991; Beggs et al., 2007; Browne et al., 2009).

This paper is a modified version of an annotated checklist of the herpetofauna of Barbados that appeared in the Journal of the Barbados Museum and Historical Society in 2009. The purpose of the current paper is to review the anthropogenic impacts on the herpetofauna in Barbados, and to comment on the conservation status of species.

**Major Anthropogenic Impacts on the Herpetofauna in Barbados**

*Habitat alteration and loss*

Barbados was first settled by Pre-Ceramic people around 4000 years ago (Drewett, 2002, 2004). However, most of these early settlements were on the coast and it was not until European settlement in the sixteenth and seventeenth centuries that large scale modification of the interior environment began. Early descriptions of the island suggest a heavily forested landscape (Colt, 1631; Ligon, 1657), with vegetation extending down to the shore (Watts, 1966). Today only relics of this vegetation remain; in Turner’s Hall Wood, in patches at the base of Hackleton’s Cliff and in some gullies (Beard, 1949; Carrington et al., 2003). The last remaining significant wetland areas are Graeme Hall Swamp and Chancery Lane Swamp on the south coast, and Long Pond and Green Pond on the east coast, although there are small areas of highly disturbed wetlands on the west coast (e.g., Holetown Hole).

The original forests of Barbados were largely cleared for agricultural purposes, firstly to produce food for the settlers and later to cultivate sugar cane, so that by 1665 most of the forest cover had been destroyed (Watts, 1966). The acreage of land under sugarcane cultivation has fallen steadily since, and within the past 40 years, the total area of land under sugarcane cultivation is estimated to have decreased by approximately 75%. Fueled by an increasing demand on land for housing and recreational activities, much of the former agricultural land has been transformed