

THE LIZARDS OF REDONDA

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INTRODUCTION

Situated between Nevis and Montserrat of the West Indies, Redonda is a remote, uninhabited island in the Lesser Antilles, belonging to Antigua. However it is not the idyllic, Caribbean paradise fringed by palm trees and beaches that this description might suggest. Rather it is an intimidating, inaccessible outcrop of volcanic rock guarded by steep cliffs up to 1000 feet tall. My desire to visit Redonda was thus fuelled not by its natural beauty but by its considerable herpetological interest. With three species recorded and reports of more to be discovered, this half-mile square piece of rock proved to have at least four, and possibly five lizard species.

Though technically a dependency of Antigua, the island was claimed as a kingdom by a Montserratian, Matthew Shiel, in 1862. Successors to this throne have included J.B. Priestley, Dorothy Sayers, Victor Gollancz and Lawrence Durrell. However, Redonda has always remained uninhabited, except for a guano and phosphate mining operation in the last century, and for the Rastafari who visit to catch the large goats that live there. One such Rastafarian, with the express mission of catching a goat for himself, was our guide on a boat trip to Redonda which included myself and two archaeologists, there to confirm reports of relics from Arawak and Carib Indians, who used to visit the island to collect birds eggs.

Accessing the island was not easy. Whilst many Montserratian fishermen boasted having visited Redonda, few in reality actually had. It transpired that there was only one boat on Montserrat large enough to survive the choppy sea journey and yet small enough to get close enough to the shore to disembark. Hiring this boat took two weeks to organise. There is no landing point on Redonda, so we had to swim through the rocks to reach the shore. With vertical cliffs on all sides, the only route to the top of the island is by a steep scree slope of loose boulders.

HABITAT

The habitat on Redonda appears quite bleak, consisting of scattered boulders interspersed with one or two species of low-growing herbs. Fig trees (*Ficus citrifolia*) grow on the steep cliffs where the goats cannot reach them, and the only other tree is a lone *Casuarina equisetifolia*. There is also a small stand of *Agave* sp. Derelict buildings and materials provide some shelter for the lizards, goats and rats.

LIZARDS FOUND ON REDONDA

Sphaerodactylus sp. (Sauria: Gekkonidae).

Sphaerodactylus geckoes are a group of tiny, leaf-litter-dwelling lizards that are found throughout the West Indies, Central America and Northern South America. There are no literature reports of this species occurring on Redonda and no specimens had been obtained from there, although members of this genus are found on nearby islands. Despite this, a *Sphaerodactylus* species appeared quite common on the island, being found under most of the stones, paving slabs and logs turned over during the visit.

Adults of this species appeared to be quite large (SVL mean= 31.8mm, N=5,) with the head seeming to be relatively large compared to other species in the region. The dorsal surface was light reddish-brown in colour, with light and dark speckles. In young specimens the light speckles were formed into transverse bands, usually 5 or 6 on the body. The dorsal scales were noticeably large and keeled, with the ventrals being mostly smooth. Many of the scale characteristics measured showed overlap with those of *Sphaerodactylus* species on nearby islands (*S. fantasticus*, *S. vincenti*, *S. sabanus*, *S. microlepis* and *S. elegantulus*), which made identification difficult. Although scale characteristics are usually the most accurate morphological aids to identification, the small size of these animals makes this difficult here, even when examining anaesthetized animals under a confocal microscope. There also appears to have been a degree of subjectivity in defining scale areas in the past. In specimens from Redonda, the only keeled scales on the ventral surface occurred in a narrow band across the gular region, a feature apparently shared only with *S. elegantulus*. The ontogenetic pattern change from transverse stripes in the young to speckles in the adult is also unique to *S. elegantulus* among species on nearby islands. The species found on Redonda has therefore been tentatively identified as *S. elegantulus*, the species found on Antigua, to which Redonda belongs. Although not the nearest island to Redonda (Nevis, St. Kitts and Montserrat are nearer), materials brought there during the mining operation there would have been brought from Antigua, and it is not unlikely that small geckoes such as these would have 'stowed away' amongst planks of wood and food supplies. Some voucher specimens were collected in the hope of conforming this species' identification.

Hemidactylus mabouia (Sauria:Gekkonidae).

According to Schwartz and Henderson (1991), this species of house gecko has not been recorded on Redonda, despite being common on most other islands in the region, where it is a familiar sight in and around buildings. Several were caught on Redonda, mostly under the paving slabs around the buildings, though not in the buildings themselves. Clutches of eggs were found in the hollow stems of dead Agave plants.

Ameiva pluvianotata atrata (Sauria: Teiidae).

This indigenous subspecies is the most conspicuous lizard on the island, and is the source of local rumours of 'black iguanas' inhabiting Redonda. Currently listed as a melanistic (all-black) subspecies of the Montserratan. *A. pluvianotata*, these animals may well represent a full species in their own right. Growing to nearly two feet in length, they are jet black, with purple spots on the lower flanks. Several were seen during the visit, despite the overcast weather on the day. One was caught as a voucher specimen, this species reportedly never having been photographed alive.

Anolis nubilus (Sauria: Iguanidae).

An indigenous Redondan species, this type has previously been described as a subspecies of *A. bimaculatus* (Williams, 1962). Originally described as a full species by Garman in 1888, it was restored to this state by Lazell (1972), though its relationship to other anoles in this region remains unclear. Looking much like a drab version of the very colourful *A. lividus* on nearby Montserrat, both males and females are dull grey-brown in colour, with the female having more contrasting grey and white body stripes. Very few were seen during the visit, and these were all in the derelict buildings on the island. Some specimens were collected, and tail tips were returned to the UK for future analysis in order to resolve their phylogenetic position.

OTHER WILDLIFE

A small herd of feral goats live on Redonda, probably left over from those brought for food for the mineworkers. These shelter in the guano caves and buildings, and through their feeding probably restrict the plant species that can survive on Redonda. They appear larger than those on nearby Montserrat, and may represent a rare breed. An unknown species of rat also proliferates on the island, probably feeding on insects, lizards, and the chicks and eggs of ground-nesting birds. They have also been seen eating the fresh droppings of seabirds. Frigate birds nest on the fig trees on the cliffs, whereas Boobys and Cormorants nest between the rocks and in the *Casuarina* tree. There is also a dwarf burrowing owl, endemic to this region, which has become extinct on Antigua. Insects appeared abundant on the island during our visit, being particularly associated with the low-growing flowering herbs. These insects are undoubtedly an essential food source for the smaller lizards.

CONCLUSION

For any naturalist travelling the area, Redonda is worth making the effort to visit. Ground-nesting birds, feral goats, hand-tame rats, rare burrowing owls, cave-dwelling bats and lizards found nowhere else in the world can all be seen and photographed easily. Climbing to the top provides a spectacular view of the current volcanic activity on Montserrat as well as of nearby Antigua, Nevis and St. Kitts.

Redonda holds interest for the scientific community as well. Oceanic islands such as those of the West Indies are ideal for studying evolutionary and ecological theory (Malhotra and Thorpe, 1991 a,b; Gorman et al., 1980; Losos, 1995; McArthur and Wilson, 1967; Thorpe et al., 1994). For example, Darwin's theory of evolution was greatly influenced by his studies on the Galapagos islands. The isolation of an initially small colonizing population on an island will lead to more rapid divergence than if it were part of a mainland population. As a result, many islands in a group will have different, indigenous species, making them ideal for between-island comparative evolutionary studies. Because of the difficulties in colonising, islands tend to have simpler faunas, which will mean that there will be fewer competitors and fewer predators for a species that does manage to colonise. This means that a species will be able to obtain a larger population size and there will be more available ecological niches into which a species can diversify. The resultant variation and high population size facilitates the use of such species as models for within-island evolutionary ecology studies. Whilst other West Indian islands feature regularly in such studies, Redonda seems to have been rarely visited by scientists, probably due to its inaccessibility.

Very few people visit the island, so it would appear that the habitat suffers little at the hands of humans. Recent very dry summers have meant declines in the goat population, as there is no running water. This may result in succession of the low herbage vegetation to scrubby woodland which may affect the lizard population. It is likely that the *Anolis* species and *Ameiva* subspecies evolved before man introduced goats to the island, so a return to the original vegetation type should the goats become extinct might benefit them. Rats probably eat the lizards and their eggs, so they may have wiped out other species present before their introduction, although the current species seem to have adapted to their presence.

Being such a small island, the lizard populations on Redonda would seem to be vulnerable to disasters such as outbreaks of disease, hurricanes, introductions of exotics or anything else that might upset the delicately balanced ecology of the island. Unlike most mainland species, an island species cannot easily adapt its range if conditions become adverse, and then recolonise when they return to normal. Some degree of protection would therefore seem in order for the wildlife of Redonda.

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