

Status of West Indian racers in the Lesser Antilles

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*The Lesser Antilles are home to four species of snakes of the genus *Alsophis*, otherwise known as racers. All four have undergone severe range reductions; at least two subspecies are extinct and another, *A. antiquae*, now occupies only 0.1 per cent of its historical range. The authors investigated the current distribution of the snakes by field surveys and interviews with the people of the islands.*

Insular snake species, from the Round Island boa to the Aruba Island rattlesnake, are prominent on lists of rare, threatened or extinct snakes. 'The risk of extinction decreases with increasing habitat size and population density. Therefore, island species with a spatially limited habitat should be more vulnerable than mainland species to extinction' (Dodd, 1987).

The Lesser Antilles (Figure 1) comprise a chain of 19 major islands and many satellite islands in the Caribbean Sea between (but not including) the Virgin Islands in the north and Trinidad in the south. Seventeen species (nine genera) including 12 endemic species, of boid, colubrid or viperid snakes are known from 18 islands. Based on field work over the last 35–40 years by many biologists, at least six of the islands known to have had snake populations in historical times have had one or more species extirpated. Six or more species have suffered extirpation. Three subspecies are extinct, and all 17 species are potentially threatened.

Lesser Antillean racers of the colubrid genus *Alsophis* are among the most threatened. Each species is found on only one or a few islands, which may be very small. On half the islands in their range they are threatened by the mongoose *Herpestes auro-punctatus*, an introduced efficient snake predator (Henderson and Sajdak, 1986). Four species of racers are known from the Lesser Antilles (Schwartz and Henderson, 1991). Their current and historical distributions are presented in Table 1.

Alsophis, with 11 named species, is the third

most species-rich snake genus in the West Indies (behind *Typhlops* and *Tropidophis*), and the second most wide ranging (after *Typhlops*). It is the most species-rich and wide ranging colubrid genus in the West Indies. Racers are a conspicuous and important part of the Antillean herpetofauna.

During 1987, we made two trips of 30 days each to investigate the status of racers in the Lesser Antilles. The first, in January and February, was to St Martin (St Maartin), St Barts (St Barthélemy), St Kitts (St Christopher), Statia (St Eustatius), Saba and Anguilla. The second, in October and November, was to Guadeloupe (Basse-Terre and Grande-Terre), Montserrat, Antigua, and Dominica. We visited 14 of the 16 islands forming the historical range of Lesser Antillean *Alsophis*.^{*} We interviewed residents and officials, and surveyed the islands for snakes. Prior to our survey only museum specimens and incidental reports (e.g. Westermann, 1953) on the status of Lesser Antillean racers were available. In March 1990, we spent 2 weeks revisiting Guadeloupe and Terre-de-Haut and visiting Terre-de-Bas.

Species accounts

Alsophis rijersmai

The Leeward Island racer's historical range included the islands of Anguilla, St Martin, and St Barts, a total area of 202 sq km.

^{*}Subfossil remains of *Alsophis* have also been found on Barbuda (Pregill *et al.*, 1988).

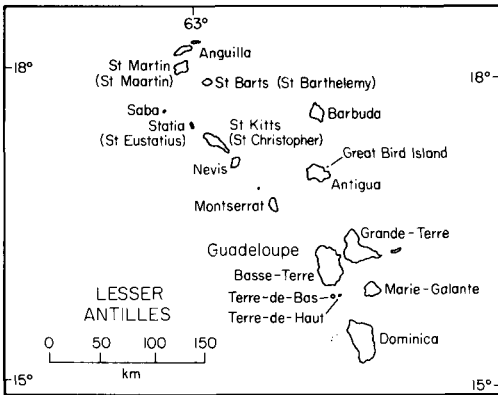


Figure 1. Map of the Lesser Antilles.

Anguilla (90.7 sq km) has an *A. rijersmai* population. In 6 days of field work, we observed three snakes. A snake was recently observed (but not collected) on Scrub Island (2.5 sq km) off the eastern end of Anguilla (E. Censky, pers. comm.); we assume it was *A. rijersmai*. St Barts (20.7 sq km) also has a racer population. In 3 field days, we observed five snakes.

The third island in the Leeward Island racer's historical range, St Martin (90.7 sq km), has a dense mongoose population and racers are probably extirpated. In 3 field days we did not observe snakes and residents seemed aware of snakes only in an historical sense. In our experience, racers are a conspicuous part of the fauna, and are well known to residents on islands where they occur. The most recent report of *Alsophis* on St Martin was in 1951 (Brongersma, 1959), and it may still exist there in localized areas and at very low densities.

On St Barts and Anguilla the Leeward Island racer was strongly associated with rocks, being observed near, on or in rock piles or walls.

Alsophis rufiventris

The red-bellied racer's historical range (302 sq km) included the volcanic islands of Saba, Statia, St Kitts, and Nevis. It has not been reported from small islands offshore of these four main islands.

The small island of Saba (13 sq km) still has a robust population of red-bellied racers. Our impression is that population density at higher altitudes (>500 m) on Saba was the greatest of any racer population we have seen. We observed and/or collected 21 snakes in 4 field days.

Statia (19.9 sq km) also has a racer population, and although we did not find them as common as on Saba, we did observe seven snakes in 4 field days.

St Kitts (176 sq km) and Nevis (93 sq km) apparently no longer have racers. Residents interviewed on both islands did not report seeing snakes and were unanimous in ascribing the lack of snakes to the presence of mongooses. The most recent reports of *Alsophis* on St Kitts and Nevis were pre-1900.

On Saba and Statia, *Alsophis* is apparently generally distributed and highly adaptable. On both islands we found it in disturbed habitats, as well as more natural areas. It was found from near sea level to within 30 m of the 864-m summit of Mt

Table 1. Current and historical ranges for Lesser Antillean racers, Genus *Alsophis*

| <i>Alsophis</i> species | Current range | | Historical range | | % Original range |
|-------------------------|---------------|--------------|------------------|--------------|------------------|
| | No. islands | Area (sq km) | No. islands | Area (sq km) | |
| <i>antiguae</i> | 1 | 0.3 | 2 | 282 | 0.1 |
| <i>antillensis</i> | 4 | 905 | 7 | 2598 | 34.8 |
| <i>rijersmai</i> | 2* | 111 | 3 | 202 | 54.9 |
| <i>rufiventris</i> | 2 | 33 | 4 | 302 | 10.9 |

* Possibly also Scrub Island.



Red-bellied racer (*A. rufiventris*) from Mt Scenery, Saba (R. Sajdak).

Scenery on Saba; on Statia we found racers at higher elevations of the Quill (550 m).

Alsophis antillensis

The southernmost *Alsophis* species in the West Indies is the Antillean racer. By comparison with the other Lesser Antillean species, it has a huge range. Historically it occurred on seven islands with a total area of 2598 sq km (Henderson and Sajdak, 1986).

Five subspecies of the Antillean racer have been described. *A. a. antillensis* from Guadeloupe (Basse-Terre and Grande-Terre) and Marie-Galante; *A. a. danforthi* from Terre-de-Bas; *A. a. sanctorum* from Terre-de-Haut; *A. a. manselli* from Montserrat; and *A. a. sibonius* from Dominica.

A. a. antillensis is probably extinct as Grand-Terre (736 sq km) and Basse-Terre (808 sq km) both have mongoose populations and during our 6-day visit (1987) residents reported that snakes did not occur there. The most recent report of *Alsophis* on these islands is pre-1930. Due to time constraints we did not survey Marie-Galante (149 sq km) or Terre-de-Bas (4.5 sq km) in 1987. There are mongooses on Marie-Galante and government officials on Guadeloupe reported that snakes were no

longer found on the island.

In 1987 we made a 1-day survey of Terre-de-Haut, a 9.5-sq-km island which is the entire range of *A. a. sanctorum*. We found a shed skin from a racer but did not see any snakes. We revisited Terre-de-Haut in 1990, and observed or captured eight racers in 3 days. We also visited Terre-de-Bas, capturing or observing six *A. a. danforthi* in 3 days.

Dominica is the largest island (790 sq km) in the Lesser Antilles that still has racers. During our 7-day survey of the island, we found racers (nine) only in Cabrits, a small peninsula at the northwestern end. Interviews with residents were not as useful in gaining information on Dominica as on most other islands, as five species of snakes are found there, and it was almost impossible to determine which species informants were discussing.

We observed two racers in a 4-day survey on Montserrat (101 sq km). The residents were familiar with the racer, and mongooses were not observed or reported.

Alsophis antiquae

The Antiguan racer has not been collected in at least 50 years. The mongoose is very common on Antigua (282 sq km) and officials and residents reported that snakes were not found on the island. We spent one day on Great Bird Island, an islet of 0.3 sq km off the north coast of Antigua where *Alsophis* had been reported. We were successful in collecting a racer there. The Great Bird Island population has been described as a new subspecies, *A. a. sajdaki* (Henderson, 1989).

Summary of species distribution

Data on the current and former distribution of Lesser Antillean racers (Tables 1 and 2) indicate that the Leeward Island racer has suffered a severe reduction in range, having apparently been extirpated from St Martin. It is found only on two islands (possibly Scrub Island also), a combined area of 111 sq km, 54.9 per cent of its historical range.

The red-bellied racer was once found on



Great Bird Island: racer habitat (*R. Sajdak*).

four islands (combined area 302 sq km). It is now found only on Saba and Statia (33 sq km combined); 10.9 per cent of its original range.

The Antillean racer had the largest range of any Lesser Antillean *Alsophis*, 2598 sq km, and has suffered the greatest reduction in range (to 905 sq km). It is known only from 34.8 per cent of its original range (four of seven islands). One subspecies is extinct, and two populations, on Terre-de-Bas and Terre-de-Haut, are in need of immediate protection.

The Antiguan racer is by far the most threat-

ened of Lesser Antillean *Alsophis*. It was once found on two islands (282 sq km), and is now confined to Great Bird Island (0.3 sq km), 0.1 per cent of its historical range. The Great Bird Island racer is in need of immediate protection as the last known population of this species.

Threats

Our work supports the belief of the local people, and of other herpetologists familiar with

Table 2. Lesser Antillean islands in the range of *Alsophis* spp

| Island | Size (sq km) | Racer species | Mongoose | Racer |
|---------------|--------------|--------------------|----------|---------|
| Anguilla | 90.7 | <i>rijersmai</i> | Absent | Present |
| St Martin | 90.7 | <i>rijersmai</i> | Present | Absent? |
| St Barts | 20.7 | <i>rijersmai</i> | Absent | Present |
| Saba | 13 | <i>rufiventris</i> | Absent | Present |
| Statia | 19.9 | <i>rufiventris</i> | Absent | Present |
| St Kitts | 176 | <i>rufiventris</i> | Present | Absent |
| Nevis | 93 | <i>rufiventris</i> | Present | Absent |
| Antigua | 282 | <i>antiguae</i> | Present | Absent |
| Great Bird | 0.3(est) | <i>antiguae</i> | Absent | Present |
| Montserrat | 101 | <i>antillensis</i> | Absent | Present |
| Basse-Terre | 808 | <i>antillensis</i> | Present | Absent |
| Grande-Terre | 736 | <i>antillensis</i> | Present | Absent |
| Marie-Galante | 149 | <i>antillensis</i> | Present | Absent |
| Terre-de-Haut | 4.5 | <i>antillensis</i> | Absent | Present |
| Terre-de-Bas | 9.5 | <i>antillensis</i> | Absent | Present |
| Dominica | 790 | <i>antillensis</i> | Absent | Present |

the area, that where the mongoose has been introduced it has been responsible for the extirpation of *Alsophis*. We found no racers, traces (shed skins, etc.) or reports of them on islands that had mongooses, whereas islands that lacked the mongoose had racers.

The mongoose was introduced on to 12 Lesser Antillean islands during the nineteenth century. With the exception of Dominica, where introduction attempts were unsuccessful, all islands larger than 101 sq km have mongoose populations. Some snakes (notably *Boa*, *Corallus*, *Mastigodryas*, and *Bothrops*) seem capable of coexisting with the mongoose, while other small, diurnal, terrestrial snakes, such as *Alsophis* spp. and *Liophis* spp., do not (Henderson *et al.*, 1988). The situation is not quite that simple, however, because *Alsophis* has been able to coexist with the mongoose on the Greater Antilles, albeit with some apparent reduction in populations. Lesser Antillean racers apparently possess characteristics, including perhaps their ground-dwelling nature, which predispose them to extirpation by mongoose.

The presence of introduced herbivores, such as goats, cattle, and other hoofed stock, or predators, such as feral dogs, cats or even green monkeys (*Cercopithecus aethiops*) may also affect racer populations, either directly by predation, or indirectly by habitat modification. However, *Alsophis* can and does coexist with these feral animals (except the green monkey).

Although local people are aware that the snakes are not dangerous and do not consider them as pests, the common reaction of inhabitants on discovering a snake is to kill it.

All the islands are undergoing rapid development for tourism, a major source of income, and are experiencing increasing populations and economic development resulting in habitat degradation or destruction, which constitutes a major threat to the racers and other snakes in the Lesser Antilles.

Conservation

Our survey of the status of *Alsophis* is a first

step towards understanding survival requirements of racers in the Lesser Antilles. We are unaware of conservation measures being implemented other than wildlife protection laws in effect on some islands. We would propose the following steps to preserve Lesser Antillean racer populations.

1. Establishment of nature reserves

Some racer species/subspecies have been reduced to relict populations on tiny offshore islands, such as *Alsophis antiguae* on Great Bird Island, and *A. antillensis sanctorum* and *A. a. danforthi* on Terre-de-Haut and Terre-de-Bas, respectively. None of these populations has received adequate protection. Such populations, although fragile, are more easily afforded protection than main island populations and strong efforts should be made to locate and protect these offshore island populations. A good example of this type of programme is the Maria Islands Nature Reserve developed by the St Lucia National Trust (Corke, 1987).

Nature reserves on the other six islands that still have racer populations: Saba (Mt Scenery), Statia (the Quill), Anguilla (Scrub Island), St Barts, Montserrat, and Dominica (Cabrits), would help protect not only racers, but other elements of the fauna (e.g. parrots, *Amazona* spp., on Dominica or orioles *Icterus oberi* on Montserrat) and habitat types (e.g. tropical forests currently being cut for timber on Dominica and other islands).

2. Education

Inhabitants of the Lesser Antilles, as almost everywhere, destroy snakes on sight. Education efforts to prevent this must involve local schools, but should also include development of printed materials on local conservation problems and projects. Good examples of such materials are Butler and Foorde (1981) and Geoghegan and Renard (1985).

3. Legislation

Legislation designed to protect snake species and their habitats are needed on many islands.

Even on islands where such protection has been granted, effective enforcement is often difficult or impossible.

4. Research

At present no study of population biology and ecology has been done for any Lesser Antillean snake. This lack of information will make recovery/management efforts difficult or impossible. Life history studies on one or more species need to be carried out as soon as possible. Another research priority is to survey offshore islets for racer populations as well as to inventory the other fauna and flora for future management, if necessary.

5. Prevent further introductions

It is of utmost importance to prevent the introduction of the mongoose or other exotic animals on to any more of the Lesser Antillean islands. The mongoose is a threat to other native wildlife (lizards and ground nesting birds) as well as to snakes.

Conclusion

Lesser Antillean racers are at a genuinely fragile stage of their history. Many species are found on only one or two small islands. Total ranges for three of the four species are less than 125 sq km, making the possibility of extinction alarmingly real. Immediate effort is needed to identify and protect existing populations and to prevent further losses of populations and species.

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