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Status of the West Indian snake *Chironius vincenti*

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The snake Chironius vincenti *(Colubridae) is endemic to the West Indian island of St Vincent, and for many years herpetologists considered the species to be extinct. Recent field work has indicated that it still survives but that it is restricted to primary and secondary rain forest (at elevations between 275 and 600 m) primarily on the leeward side of the island and that it probably occurs at low population densities. The range of* C. vincenti *appears to overlap widely with that of the endangered St Vincent parrot* (Amazona guildingii) *and the snake will gain significant, direct benefits from the protection afforded the parrot.*

The West Indies harbour a rich, ecologically intriguing, and zoogeographically enigmatic snake fauna; endemic genera and species abound, especially in the Greater Antilles. Island snake faunas in general, and in the West Indies in particular (Dodd, in press), have proven to be sensitive to the introduction of alien predators (Henderson, 1992). Especially vulnerable have been the ground-dwelling colubrids of the genera *Alsophis* and *Liophis* (Sajdak and Henderson, 1991; Henderson, 1992). Several taxa have become extinct, either totally or locally, or have had their ranges reduced to small fractions of what they were historically (in some cases ranges have been reduced to <0.5 sq km).

Henderson (1992), in a review of reptile extirpations and extinctions in post-Columbus West Indies, concluded that reptiles in the Lesser Antilles are more sensitive to the presence of alien predators (for example the mongoose *Herpestes auropunctatus*) than they are to habitat modification; of lesser consequence has been habitat destruction (Henderson, 1992; but see Corke [1992] for an alternative opinion). Henderson (1992) noted two possible exceptions: the anguid lizard *Diploglossus montiserrati* (endemic to Montserrat), and the colubrid snake *Chironius vincenti* (endemic to St Vincent). This paper focuses on the latter.

Snakes of the genus *Chironius* occur on the neotropical mainland from Nicaragua to southern Brazil and Argentina. They have slender, elongated bodies, are diurnal, ground-dwelling to semi-arboreal, and feed primarily on frogs, but also take birds and mammals (Duellman, 1990; Schwartz and Henderson, 1991). *Chironius vincenti* is the only member of the genus that occurs in the West Indies, and its distribution is restricted to St Vincent (345 sq km). It was described in 1891 and the five known specimens known before 1987 were probably all collected prior to 1890. Because no specimens of *C. vincenti* had been collected for nearly a century, despite considerable herpetological collecting on St Vincent, it was considered to be extinct (due to mongoose predation) (Wiest, 1978; Dodd, 1987).

During each of three field trips to St Vincent in 1987, 1988, and 1990, R.W.H. had the serendipitous opportunity to examine a specimen of *C. vincenti*, including the first specimen to reach a museum collection in over 100 years (Henderson *et al.*, 1988). Each of the three specimens was dead when examined; two of the three were in the offices of the Forestry Division on St Vincent, and two of the three were donated to the Milwaukee Public Museum (MPM). Obviously, *Chironius vincenti* was not extinct, but it was poorly known and, based on conversations with Forestry Division personnel on St Vincent, it was habitat-restricted.

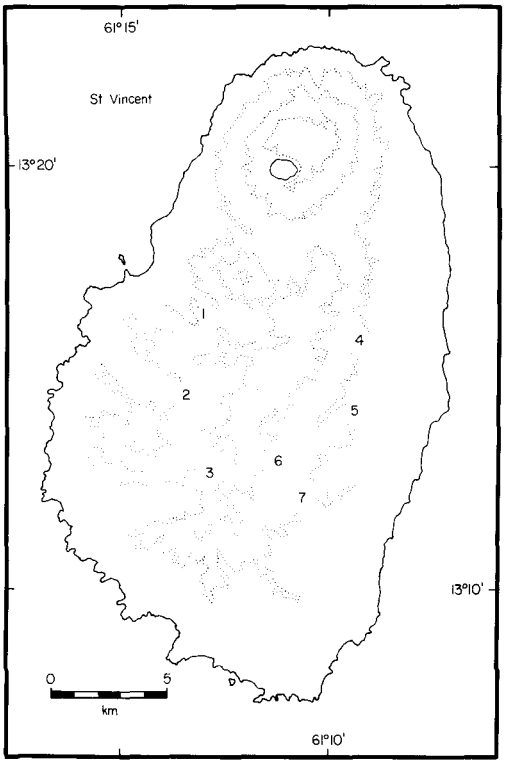


Figure 1. Map of St Vincent indicating areas referred to in the text. The contour lines are at 1000 ft (305 m), 2000 ft (610 m), and 3000 ft (914 m). *Chironius vincenti* has been collected, and is represented by museum specimens, at Areas 2, 3 and 7.

The primary goals of a field-based survey in St Vincent were twofold: (i) to determine the approximate range, and (ii) to determine habitat requirements for *Chironius vincenti*. Secondarily, we wanted to determine how much overlap occurred in the ranges of *Chironius vincenti* and the endangered, endemic St Vincent parrot *Amazona guildingii*. The parrot is a national symbol of St Vincent, it has received considerable national and international publicity, and dedicated efforts are being made to conserve its rain-forest habitat (Butler, 1988).

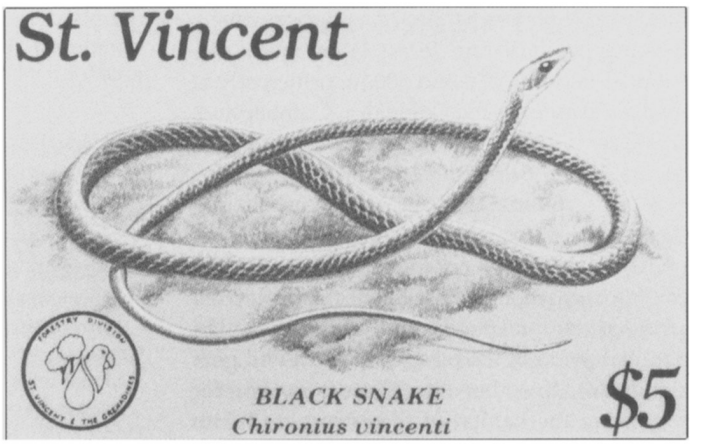
Methods

From 2 to 10 March 1992 we drove 835 km on St Vincent, visiting areas known or thought to be potential habitat for *Chironius vincenti*, whose local name is 'blacksnake'. St Vincent harbours two other snake species: *Corallus enydris*, an arboreal boa that is known as 'Congo snake' or 'lazy snake', and *Mastigodryas bruesi*, a semi-arboreal colubrid known as the 'white snake'. None of the snakes is dangerous to humans. We interviewed at least 31 Vincentians at localities over much of the island, and we used vernacular names and photographs in order to determine their familiarity with the three species in general, and the blacksnake in particular. G.T.H. had been assigned to the Forestry Division as a member of the US Peace Corps and had many opportunities to travel over much of the island over a 2-year period. We used his contacts, and had considerable co-operation from Forestry Division personnel. In addition, we spent *c.* 50 hours hiking (by day and night) through what we considered to be appropriate *C. vincenti* habitat.

While conducting our intensive survey to determine the range of *C. vincenti* and identify its habitat, personnel of the Forestry Division were conducting their biannual parrot census. From them we received input regarding *Chironius* sightings, and their impressions concerning habitat overlap between the parrot and *C. vincenti*.

Results

Based on responses of interviewees, sightings by forestry personnel, and locality information accompanying preserved specimens, *Chironius vincenti* is widespread in forest (primary and secondary rain forest) habitat between 275 m and at least 600 m elevation (Figure 1). It apparently occurs at low densities, but it is not rare. It is diurnal, encountered at ground level or above ground level in low vegetation. It has been observed on shaded forest trails and, in the early morning, in sunny forest clearings. Examination of stomachs of preserved individuals indicates that it preys on frogs of the leptodactylid genus *Eleutherodactylus* (Henderson *et al.*, 1988; Schwartz and Henderson, 1991). The largest specimen collected to date (MPM



Postage stamp issued by the government of St Vincent and the Grenadines depicting a black-snake (*Chironius vincenti*).

23615) was a female (snout-vent length 1260 mm, weight 465 g) (Henderson *et al.*, 1992). We know nothing about reproduction other than that it is oviparous.

People living on the leeward (western) side of the island were much more familiar with *C. vincenti* than those living on the windward (eastern) side. Most interviewees on the windward side were familiar only with *Corallus* and *Mastigodryas*; virtually every person interviewed on the leeward side knew all three snake species, and most described *C. vincenti* as rain-forest-restricted (for example 'in the mountains' or 'in high forest'). We received numerous reports of it being fairly common at the Hermitage water catchment and at Young Man's Valley in the Cumberland watershed (Area 2, Figure 1), at the Vermont Nature Reserve (Buccament Valley; Area 3, Figure 1) in the Dalaway watershed, and in the Chateaubelair-Richmond watershed (Area 1, Figure 1), all on the leeward side of St Vincent.

We received mixed reports from the Montreal area of upper Mesopotamia (Area 7, Figure 1), although a large *C. vincenti* was killed there in 1990 (Henderson *et al.*, 1992). In this area of intensive agricultural exploitation (mainly banana plantations) forest has been cut to at least 610 m, although it is against the law to cut above 305 m, and a variety of pesticides are in use. Those people interviewed in the Colonaire Basin (Areas 5 and 6, Figure 1) and Congo Valley (Area 4, Figure 1) (both windward localities) either did not know *Chironius*, or directed us to leeward localities.

There is little evidence to indicate that *C. vincenti* occurs in any kind of habitat other than primary or secondary forest. It may occasionally occur where agriculture and forest meet (for example upper Mesopotamia). There is no evidence that it occurs in heavily disturbed areas where *Corallus* and *Mastigodryas* do occur (Schwartz and Henderson, 1992).

All evidence indicates that the range of *Chironius vincenti* widely overlaps that of the St Vincent parrot. Both species are forest-restricted, and *A. guildingii* occurs in greatest numbers in areas (Buccament [Vermont Nature Reserve]; Cumberland/Hermitage; Butler, 1988) where *C. vincenti* is known to occur based on specimens and sightings.

We did not encounter *Chironius* during the course of our survey, but on 17 March 1992 a parrot inventory crew working in the Vermont Nature Reserve inadvertently killed a blacksnake (now MPM 26155) at 12.15 h as it foraged on the ground along a bank of a shallow stream.

Discussion

Apparently the distribution of *Chironius* on St Vincent is largely restricted to the leeward side of the island and this may be due in large part to its more rugged nature. Patchily distributed pockets of forest remain on steep lands below 300 m. Conversely, the windward side of the island has been thoroughly exploited agriculturally, and forest cover is

nearly absent below 300 m (Butler, 1988). Existing primary rain forest is narrowly distributed between 350 and 500 m, principally at the headwaters of the Colonaire, Cumberland, and Buccament valleys; secondary rain forest occurs mostly below this belt (Beard, 1949).

It is fortuitous that the range of the endangered endemic parrot *Amazona guildingii* widely (or perhaps completely) overlaps that of *Chironius vincenti*. Because of the protection afforded *A. guildingii*, and because of the national pride in the bird, *C. vincenti* will gain significant, direct benefits. There is concern for protecting the habitat of the parrot, and considerable time, money, and energy are dedicated each year for education programmes, censuses, and habitat evaluations (Butler, 1988). Likewise, there is some awareness of the significance of *C. vincenti* as demonstrated by a recently issued postage stamp.

As on other West Indian islands, St Vincent has an agriculture-based economy, and agriculture (especially bananas) continues to encroach on tropical forests, including those inhabited by *Chironius vincenti* and *Amazona guildingii*. Habitat destruction is the primary threat facing *A. guildingii* (Butler, 1988) and *C. vincenti* (Henderson, 1992), and estimates of rates of deforestation on St Vincent range from 1 to 5 per cent annually (C. Richards, St. Vincent Forestry Division, pers. comm.). A 4399-ha parrot reserve has been proposed (Butler, 1988) which includes critical areas 1, 2, and 3 for *C. vincenti* (Figure 1). If the reserve becomes reality and is afforded real protection, the futures of *A. guildingii* and *C. vincenti* should brighten considerably.

Acknowledgments

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