



INTRODUCED SPECIES

First Records of the Red Cornsnake *(Pantherophis guttatus)* from Abaco Island, The Bahamas, and Notes on Their Current Distribution in the Greater Caribbean Region

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Red Cornsnakes on Abaco Island, The Bahamas

Red Cornsnakes (*Pantherophis guttatus*) were first recorded in The Bahamas in the mid-1990s on Grand Bahama Island (Buckner and Franz 1987), with subsequent reports elsewhere on Grand Bahama (Little Bahama Bank) and New Providence (Great Bahama Bank) (Knapp et al. 2011, Buckner et al. 2012). Here, I report the first observations of Red Cornsnakes on Abaco Island, a large island (~165 km long) of the Little Bahama Bank at the northeastern edge of The Bahamas Archipelago. These observations extend the known range of introduced populations of Red Cornsnakes in The Bahamas and exemplify the spread of the species throughout the greater Caribbean region.

I collected two Red Cornsnakes (Figs. 1 & 2) on Abaco Island, The Bahamas in October and December 2012 near the town of Cherokee on the eastern coast of Abaco. No available data point to the origin(s) of these snakes. The identification was confirmed by Dr. Kenneth L. Krysko, Florida Museum of Natural History. Collection sites were within 1 km of one another. Both snakes were found in a low-density residential area dominated by low, evergreen forest (coppice)



Fig. 1. Hatchling Red Cornsnake (*Pantherophis guttatus*) found alive on 25 October 2012 near Cherokee Sound, Abaco Island, The Bahamas (26.2835/-77.03469) (UF 169221).



Fig. 2. Adult Red Cornsnake (*Pantherophis guttatus*) found alive on 2 December 2012 near Cherokee Sound, Abaco Island, The Bahamas (26.29015/-77.03432) (UF 169222).

consisting of Thatch Palm (*Thrinax radiata*), Mahogany (*Swietenia* sp.), Poisonwood (*Metopium toxiferum*), and Gumbo Limbo (*Bursera simaruba*).

Red Cornsnakes in the Caribbean Region

Red Cornsnakes have been found throughout the greater Caribbean region, with records from 16 different islands and islets within the Lesser Antilles, Cayman Islands, Virgin Islands, the Bahamas Archipelago, and continental islands off the northern coast of South America (Table 1). Until 2000, only four observations of Red Cornsnakes had been recorded in the region (Fig. 3). However, over the last 13 years this number has increased to >15 (Table 1). While some of these observations are of single individuals (often deemed “waifs”) and do not constitute established (i.e., breeding) populations, these records do indicate a continued introduction of individuals to new islands. In several instances, for example records

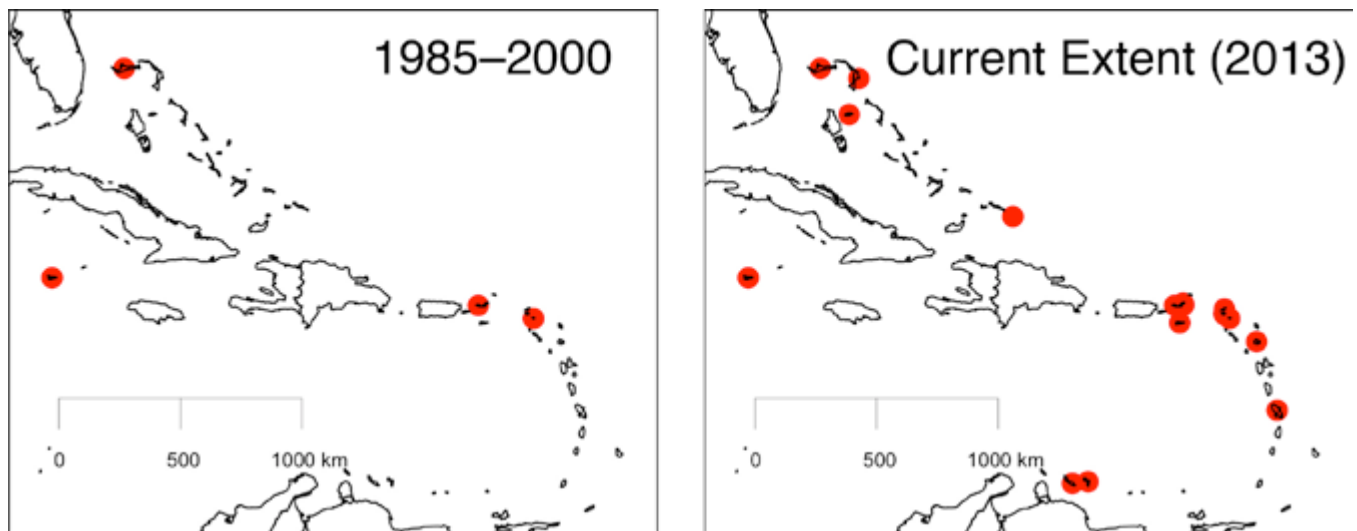


Fig. 3. Distribution of Red Cornsnakes (*Pantherophis guttatus*) in the Caribbean region. The left panel shows the distribution prior to 2000 and the right panel shows the distribution in 2013. The date of first observation is not reported for several records; the date of publication is used in those instances.

Table 1. Published records of Red Cornsnakes (*Pantherophis guttatus*) in the greater Caribbean (defined as including the Bahamas, Greater and Lesser Antilles, and continental islands off the northern coast of South America). Note that the U.S. and British Virgin Islands (USVI and BVI, respectively), except for St. Croix, are part of the Puerto Rico Bank.

Year*	Island	No. Observed	Selected Citations
1985	Grand Cayman	multiple	Franz et al. 1987, Echternacht et al. 2011
1993	Grand Bahama	5	Buckner and Franz 1994, Hayes et al. 2004
1995	Saint-Barthélemy	15	Breuil 2002, Questel and Vitry 2012
1990s	St. Thomas (USVI)	multiple	Perry et al. 2003; Platenberg and Boulon 2006, Platenberg 2007
2001	Curaçao	multiple	Perry et al. 2003, van Buurt 2006
2002	Bonaire	nr	Perry et al. 2003, van Buurt 2006
2003	Anguilla	2	Hodge et al. 2003, Hodge et al. 2011
2003	Antigua	nr	Kairo et al. 2003
2005	Martinique	multiple	Breuil 2009
2006	Little St. James (USVI)	1	Perry and Platenberg 2007
2006	St. Martin	nr	Powell 2006
2006	Tortola (BVI)	multiple	Perry and Gerber 2006
2007	St. Croix (USVI)	nr	Platenberg and Boulon 2006
2008	Peter Island (BVI)	2	Perry and Gerber 2006
2010	Grand Turk	3	Reynolds and Niemiller 2010
2010	New Providence	nr	Knapp et al. 2011
2012	Abaco	2	this study
2012	Guana Cay (off St. Martin)	nr	Henderson and Breuil 2012

*Year of first observation if available; if not, the year of publication is listed
nr = not reported

from St. Thomas (USVI) and St.-Barthélemy (Platenberg 2007, Questel and Vitry 2012, respectively), the first observations of individuals preceded detection of established populations by at least a decade. This lag between initial detection of Red Cornsnakes on an island and the subsequent observation of breeding populations is not surprising given their cryptic habits (Ernst and Ernst 2003), which makes detection probabilities low.

As with other introduced reptiles, introductions of Red Cornsnakes into the region have been attributed to the pet trade or, more frequently, to the international trade in landscaping plants and building materials (Powell et al. 2011). In fact, several records report direct observation of Red Cornsnakes being transported on landscaping plants to the Cayman Islands (Franz et al. 1987), Virgin Islands (Perry and Plantenberg 2007), and Curaçao (van Buurt 2006).

Although most reports correlate arrivals of non-native reptiles in the region with goods coming from Florida (e.g., Powell et al. 2011), the wide geographic spread of observations within the Caribbean region could reflect a stage in the species' expansion/invasion in which the sources of introductions are other introduced populations, so-called secondary introductions (e.g., Kolbe et al. 2007). Platenberg (2007) cited cargo traffic between St. Thomas and Little St. James Island (USVI) and Tortola (BVI) as likely sources of Red Cornsnakes within the Virgin Islands. Similarly, secondary introductions might have arisen from domestic traffic between Bahamian ports on Abaco, Grand Bahama, and New Providence.

Natural limits to the spread of Red Cornsnakes are possible. Native and introduced predators, including snakes, mongooses, and domestic cats, could control population sizes. Also, van Buurt (2006) suggested that the hot arid environs of Curaçao and Bonaire are adverse to establishment of Red Cornsnakes, and, in fact, Red Cornsnakes have been found only in irrigated areas on those islands. Although van Buurt (2006) was correct in noting that the environmental conditions on those islands are particularly harsh, the climates of many Caribbean islands are similar to some portions of the species' native range, notably the Florida Keys. The establishment of breeding populations in the Lesser Antilles, Cayman Islands, and The Bahamas further evinces the suitability of habitats for Red Cornsnakes on many islands in the region.

Platenberg (2007) noted the potential ecological threats of Red Cornsnakes via predation and competition with native faunas. Several endemic Caribbean birds, lizards, and snakes are potentially vulnerable. The catholic diet and broad habitat use of Red Cornsnakes make them potential predators of many of these species. At the moment, most observations are from developed habitats such as commercial ports and constructions sites. However, several observations in the Bahamas are in undeveloped pineland and coppice habitats (Hayes et al.

2004, this study), suggesting that Red Cornsnakes can populate habitats where threatened endemics such as the Bahamas Parrot (*Amazona leucocephala bahamensis*) and several species of rock iguanas (*Cyclura* spp.) occur. Competition with native snakes is another concern. A number of Lesser Antillean snake populations are already declining and several species presumably are extinct (Powell and Henderson 2005). Competition with an introduced predator for food could exacerbate these declines.

Acknowledgements

I thank Kenneth L. Krysko for confirming species identification and for providing assistance with specimen preparation. Craig A. Layman, Robert Powell, and an anonymous reviewer provided helpful comments on the manuscript. Friends of the Environment (www.friendsoftheenvironment.org) provided valuable field support on Abaco.

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