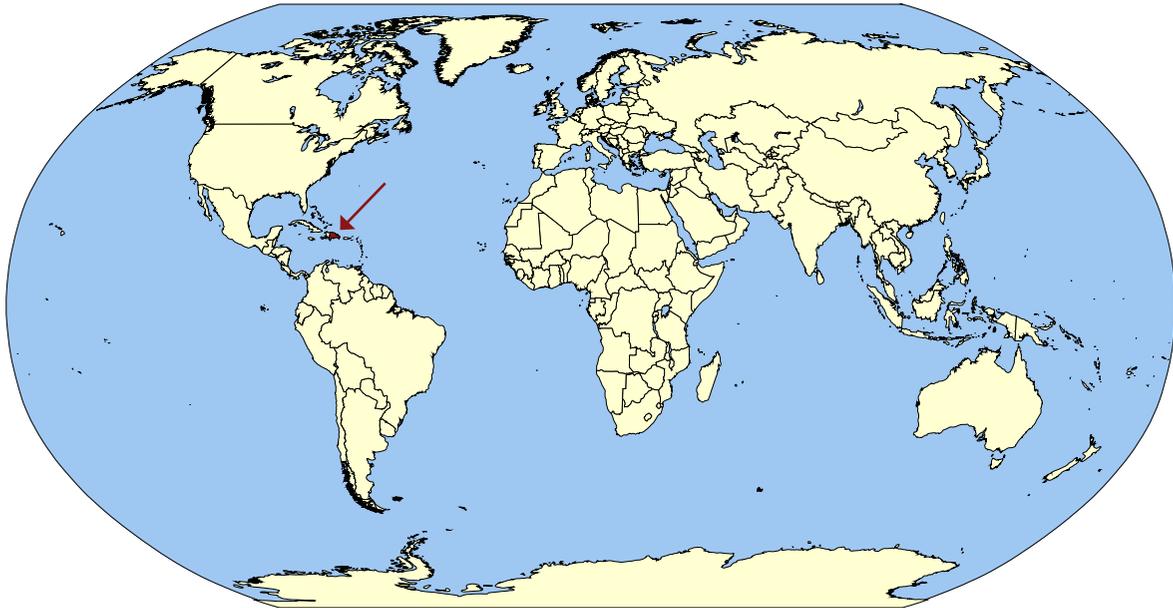


# Dominican Republic

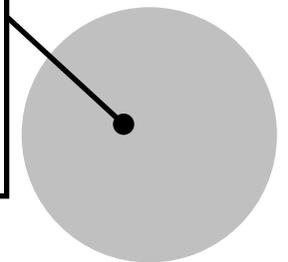


## The History of Schistosomiasis in the Dominican Republic

In the Dominican Republic, schistosomiasis transmission has traditionally been limited to the country's southeastern peninsula in the regions of El Siebo, Higüey, and Hato Mayor, the latter being the most severely endemic location of the three [1]. Sugarcane plantations are common in the area, and their presence likely contributes to its high transmission [1]. The first case of *S. mansoni* was reported in the Dominican Republic in 1942 [1]. However, this finding was controversial, and the first undisputed autochthonous infections in the Dominican Republic were reported in 1947 [2]. Control of the disease has been pursued for decades, starting in 1952. That year, a team of researchers molluscicided around 4 km of river near Hato Mayor with sodium pentachlorophenate, and no snails were found 6 months after treatment at this site [3]. Before any kind of nationally integrated control program was established in the Dominican Republic, there were an estimated 1,000 infected individuals and 6,000 at risk in 1968 [4].

## Schistosomiasis in the Dominican Republic [17]

The WHO reports that **no preventative chemotherapy is required** in the Dominican Republic.



## Overview of the Dominican Republic [18]

- » Population in 2015: 10,478,756
- » Official Language: Spanish
- » Capital: Santo Domingo
- » Democratic Republic
- » Percentage of Population with Access to Improved Drinking Water in 2012: 80.9%
- » Percentage of Population with Access to Improved Sanitation in 2012: 82%

## Control Programs in the 1970s

In 1970, the Center for the Eradication of Bilharzia was established to keep central records of schistosomiasis cases detected by coprologic examination [2]. In addition to keeping these records, throughout the 1970s this program raised *M. cornuareitis* snails in tanks and distributed them throughout endemic areas and also used the molluscicide Frescon to keep snail populations down [2]. In 1976 the program employed 27 people for schistosomiasis control and molluscicided 10,383 square km [5]. Possibly as a result of such vector control, the percentage of infected individuals tested for schistosomiasis showed marked decreases throughout this decade [2].

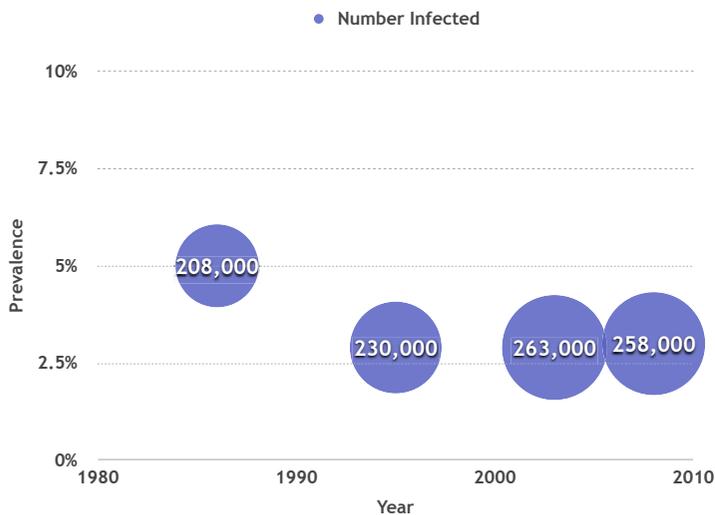
## A Fortuitous Invasion

Biological control from invasive species appears very relevant to the case of Dominican Republic as well. *B. glabrata* is the host species for *S. mansoni* in the Dominican Republic, and a series of surveys from 1963 to 1968 indicated that *B. glabrata* was present over about 1/6th of the land area of the Dominican Republic, and was deemed 'uncommon' in its surface waters [1]. *T. granifera* was introduced to the Dominican Republic around 1967 [6]. *M. tuberculata* was introduced in 1970 [7]. In 1972-1973, another survey found *B. glabrata* in 11 of 36 water bodies inspected on the island; none was 'highly infected' with schistosomiasis [1]. In 1976, a study showed that in the area of Cotui, rice fields previously containing *B. glabrata* were almost bare of the species, instead populated with *M. cornuarietis*, *T. granifera*, and *T. tuberculata* even though molluscicides had not been applied there [2]. A 1979 paper reported that 23 of 96 localities contained *B. glabrata* [1]. Experiments performed between 1987 and 1988 with introduced *T. granifera* in areas populated by *B. glabrata* showed *T. granifera* driving away *B. glabrata*, displacing them by chemical or mechanical methods [8].

## Prevalence Trends

Estimates indicated that 279,282 people were 'exposed to the disease' in 1975 and between 1982 and 1987, countrywide prevalence rates of 7-24% were reported [9], and new foci of transmission were found in the center of the country, not just the southeast [10]. By 1985, *T. granifera* and *T. tuberculata* were reportedly found in 'extraordinary numbers' in the endemic area [2]. By 1986, there were an estimated 4.16 million people at risk and 208,000 infected in the Dominican Republic, with an estimated 5% prevalence [11]. As of 1993, praziquantel was available for drug therapy, but the country's Ministry of Health had no systemic plan for controlling schistosomiasis [12]. In 1995, the Dominican Republic had 4.6 million people at risk and 230,000 infected [13]. The WHO in 2000 stated that despite that fact that 'limited resources have been made available to schistosomiasis control', the spread of *T. granifera* and *M. cornuarietis* likely displaced *B. glabrata* and helped reduce transmission [9]. Prevalence in 2003 was about 2.9% [14]. As of 2006, the Dominican Republic contained 67% of those at risk of schistosomiasis in the Americas who live near under-surface irrigation [15]. An estimated 258,000 people were infected in the Dominican Republic in 2008 [16], and prevalence was 3.0% was estimated in 2010 [14].

Biological control from invasive species appears very relevant to the case of the Dominican Republic -- competitor snail species have driven away *B. glabrata* snails, which host schistosomiasis



## Disease Prevalence in the Dominican Republic

The overall prevalence of schistosomiasis in the Dominican Republic has decreased over the past few decades -- the proportion of infected individuals to healthy has more or less declined. However, since the Dominican Republic's population has drastically grown, more individuals are becoming infected -- even if the proportion is smaller.

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