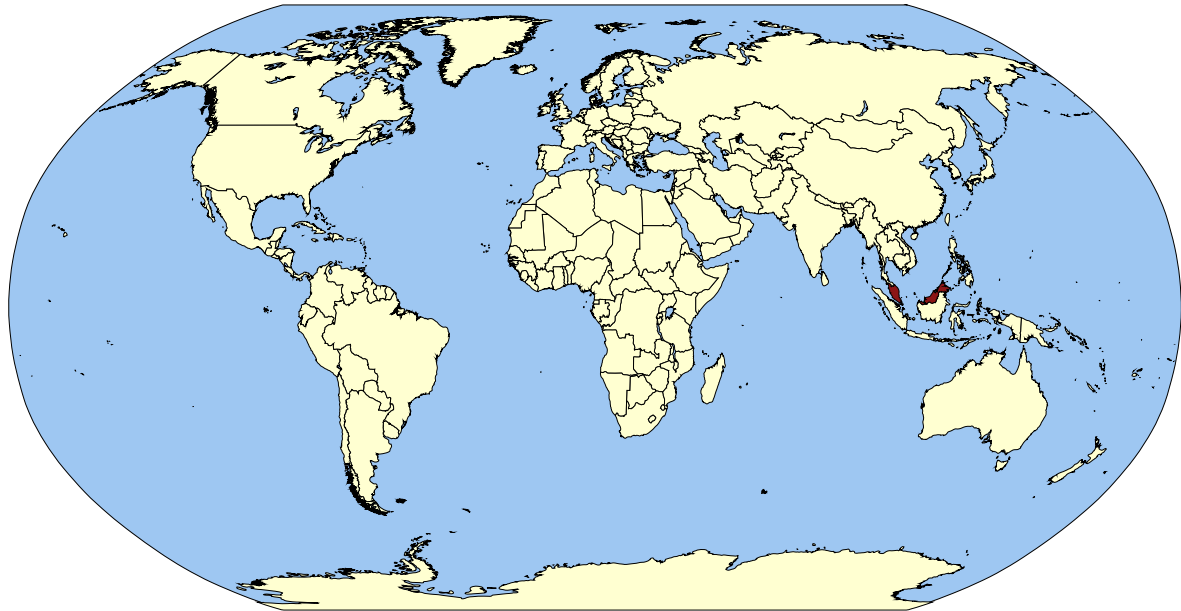


Malaysia

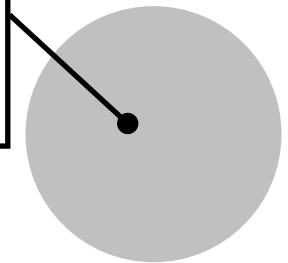


The History of Schistosomiasis in Malaysia

Schistosomiasis in Malaysia was not a matter of significant public health concern, and there is no evidence of a large-scale centralized control strategy. Early cases of schistosomiasis, dating back to as early as 1904, were imported from neighboring countries endemic with *Schistosoma japonicum* [1]. From 1964 onward, most imported cases occurred among immigrant Chinese, Filipino, Egyptian, and Japanese populations at the University Hospital and the General Hospital in Kuala Lumpur. All of these cases indicated infection with either *S. japonicum* or *S. mansoni* [2]. It wasn't until 1973 that the first autochthonous case was reported following discovery of *S. japonicum* ova (eggs) in the autopsy of an aboriginal woman from Pahang State in Malaysia [3]. Following this finding, a retrospective survey carried out on autopsies of other aboriginal individuals, known as Orang Asli, indicated 5.5% prevalence [4]. The biopsies conducted in this study revealed infection with ova smaller than *S. japonicum* and the species of the snail host was different than those typically associated with *S. japonicum* in Asia [2]. Together, these observations suggested the presence of a genetically distinct strain of *Schistosoma* [2].

Schistosomiasis in Malaysia

Schistosomiasis considered non-endemic



Overview of Malaysia [12]

- » Population in 2015: 30,513,848
- » Official Language: Bahasa Malaysia
- » Capital: Kuala Lumpur
- » Constitutional Monarchy
- » Percentage of Population with Access to Improved Drinking Water in 2015: 98.2%
- » Percentage of Population with Access to Improved Sanitation in 2015: 96%

The First Living Case: A Different Strain?

In 1978, the first living case of schistosomiasis in Malaysia was discovered in another Orang Asli individual. Once again, the eggs examined in the liver biopsy were noted as smaller *S. japonicum*-type eggs. The patient also disclosed that he spent significant time hunting in the jungles of the Pahang State. The authors suspected that this *Schistosoma* species belonged to a sylvatic (wild) source given the exclusive infection of Orang Asli individuals who spend significant time in contact with sylvatic animals [2]. Similarly, the fact that no ova were shed in human stools from infected individuals suggests that humans may be an accidental or dead-end host of this newly discovered species of *Schistosoma* [5].

Schistosoma malayensis

The new *Schistosoma* strain was later referred to as *S. malayensis*, and the implicated intermediate snail hosts belong to the *Robertsiella* species [6]. It is important to note that all *Robertsiella* populations were reported to be scattered in the foothills and mountainous regions of peninsular Malaysia, in water sources that, historically, only the Orang Asli would come into contact with [6]. Although agricultural development from the 1950s to the 1980s increased the number of people both living and working in areas with *Robertsiella* populations, evidence of some focal control methods put in place limited snail populations. The use of mechanized clearing techniques, including in rubber and oil palm plantations and the clearing of vegetation along streams, proved successful in destroying many *Robertsiella* habitats [6].

Tracking a Focal Strain

A 1989 study focusing on at-risk aboriginal populations found 13% prevalence in those communities surveyed through ELISA testing [7]. Despite such focal infection, schistosomiasis was never considered a significant public health problem or priority [7]. A 1998 World Health Organization report echoed these sentiments a decade later in noting that schistosomiasis is not a public health problem in Malaysia [8]. In 2001, prevalence surveys were conducted in various indigenous tribes at the site of a multibillion Ringgit hydroelectric power project and found 6.8% of the individuals to be seropositive for schistosomiasis, as determined by ELISA [9]. Country wide prevalence, however, was estimated at 0% in 2003 and the disease is currently considered non-endemic [10]. Overall, *S. malayensis* in Malaysia appears to have been focally endemic. This and the general absence of *Robertsiella* habitats in bodies of water where human contact is frequent contributed to the historical low prevalence of schistosomiasis on a national level [6]. Moreover, *S. malayensis* appears to be a primarily sylvatic disease that has a predominate affinity for rat reservoir hosts, specifically *Rattus muelleri* and *Rattus tiomanicus* [7,11]. This was confirmed in a 2011 report concluding that *S. malayensis* transmission is entirely maintained in sylvatic rodent hosts in Malaysia and is not a risk to human populations.

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