

INTERMEDIATE HOSTS OF SCHISTOSOMA MANSONI IN BRAZIL

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The Brazilian planorbicidal chart is slowly but progressively been increased by new data. Distribution of vector species of Schistosoma mansoni, according to Paraense, 1986, may be thus resumed: Biomphalaria glabrata – delimited by parallels 13 and 21°S and meridians 39 and 45°W, area of greater dominance (Southerst Bahia, oriental half of Minas Gerais and Espírito Santo). It is observed along the coast line of the states of Sergipe, Alagoas, Pernambuco, Paraíba and Rio Grande do Norte. Starting from there, it is found towards the southwest, in the direction to the São Francisco River and South-Center of Minas Gerais. Isolated population may be observed in other states. Its presence is probably, associated to the transmission of schistosomiasis in all areas where it occurs. B. tenagophila – extends it self through a wide strip of coast-line from the South of Bahia (17°45'S; 39°15'W), RS (33°41'S, 53°27'W). In São Paulo and Rio Grande do Sul states it is found further inland. It is important in schistosomiasis transmission in the Paraíba valley (SP). Isolated populations are observed in the Federal District and Minas Gerais state. B. straminea – better adapter species to climatic variation, having a more dense distribution in the northeast (41°W and 110°S), south of Bahia and northeast of Minas Gerais (150 and 180°S, 400 and 440°W). It is less susceptible than the B. glabrata, being however the most important responsible for the transmission of S. mansoni in the northeast, chiefly in the northeastern dry area, where it is almost the only transmissive species.

Key words: *Schistosoma mansoni* – intermediate hosts

Of the six genera of Planorbidae family that exist in Brazil, only snails of the *Biomphalaria* genus act as intermediate hosts of *Schistosoma mansoni*. At present, the genus *Biomphalaria* is represented in Brazil by 10 species: *B. glabrata*, *B. tenagophila*, *B. straminea*, *B. peregrina*, *B. intermedia*, *B. amazonica*, *B. occidentalis*, *B. schrammi*, *B. oligoza* and *B. kuhniana*. Among these, natural *S. mansoni* infection has only been reported in the first three. However, *B. amazonica* (Corrêa & Paraense, 1971; Paraense & Corrêa, 1985) and *B. peregrina* (Paraense & Corrêa, 1973) have been shown, in the laboratory, to be potentially capable of acting as intermediate hosts of *S. mansoni*.

INTERMEDIATE HOSTS OF *S. MANSONI*

The most important species is *B. glabrata* both in terms of the extent of its distribution and the efficiency with which it transmits *S. mansoni*. With the exception of a few areas

where the degree of its susceptibility is variable (Paraense & Corrêa, 1963), these snail populations are generally associated with the transmission of schistosomiasis.

Despite its dominance in some areas, *B. tenagophila* is generally found in nature with low rates of infection. Nevertheless, it is responsible for the focus in Vale Paraíba (Corrêa et al., 1956) and Peruíbe on the São Paulo coast, São Francisco do Sul in Santa Catarina (Bernardini & Machado, 1981), Grande Vitória in Espírito Santo (Pereira Jr, 1972) and in the state of Rio de Janeiro (Deane et al., 1953). In Minas Gerais, the species maintains the focus in Itajubá in the south of the state (Carvalho et al., 1985) and has been found naturally infected in the towns of Jacoticatubas (Mello & Pereira, 1985) and in the artificial lake at Pampulha in Belo Horizonte (Carvalho et al., 1985a).

Biomphalaria straminea is less susceptible than *B. glabrata* and is found in nature with low levels of infections. This is probably compensated by the number of snails and the quan-

tity of cercariae eliminated. Its importance in the transmission of the diseases almost totally restricted to the northeast of the country where it is considered to be more important than *B. glabrata* (Lucena, 1950). Due to the fact that *B. glabrata* almost exclusively inhabits coastal regions, the importance of *B. straminea* in the transmission of schistosomiasis is increasingly more important towards the interior of regions, where this species predominates (Paraense, 1977). In addition, it has been implicated in the transmission of schistosomiasis in Fordlândia in the state of Pará (Machado & Martins, 1951) and in Goiânia in the state of Goiás (Cunha Neto, 1967). More recently, the responsibility for the autochthonous cases of schistosomiasis in Paracatu, in the northeast of the state of Minas Gerais, was attributed to *B. straminea* which, although it was not found infected, was the only species observed in the area (Carvalho et al., 1988).

GEOGRAPHICAL DISTRIBUTION

The map of Brazilian snail distribution is becoming slowly but progressively more complete as new data is added. According to Paraense (1986), the distribution of the species that are vectors of *S. mansoni* can be summarized thus:

B. glabrata – The area where this species is dominant is delimited by the 13° and 21° southern parallels and the 39° and 45° western meridians. This corresponds to the southeast of Bahia, the eastern half of Minas Gerais and Espírito Santo. It also has a continuous range throughout the coastal areas of the states of Rio Grande do Norte, Paraíba, Pernambuco, Alagoas and Sergipe. In addition to these areas, it is also found in the southeast, in the area of the São Francisco river and the central south of Minas Gerais with a few further populations in the States of Pará, Maranhão, Bahia, Goiás, Rio de Janeiro, São Paulo and Paraná where it reaches the limit of its distribution in Curitiba (25° 25'S).

B. straminea – This species is the most best adapted to ecological and climatic variations. It possesses the widest distribution among the three species and is found in almost all the water basins of the country. Its distribution is most dense in the northeast (41°W and 11°S) and in the region consisting of the south of Bahia and the northeast of Minas Gerais (15° and 18°S, 40° and 44°W).

B. tenagophila – This species is found throughout coastal areas from the south of Bahia (17° 45'S, 39° 15'W) to Chuí (33° 41'S, 53° 27'W) in Rio Grande do Sul. In the states of São Paulo and Rio Grande do Sul the species is encountered more frequently towards the interior. A few isolated populations can also be found in the Distrito Federal and Minas Gerais.

The description of a new species of the *Biomphalaria* genus, *B. occidentalis* (Paraense, 1981) has resulted in the modification of the map of the distribution of *B. tenagophila*; the former replacing the latter in east of São Paulo, Mato Grosso and Mato Grosso do Sul.

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