

Revista de Saúde Pública  
ISSN 0034-8910 versão impressa

Rev Saúde Pública 2003; 37(5)

## Updating of the distribution of *Aedes albopictus* in Brazil (1997-2002)

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### ABSTRACT

Updating regarding the distribution of *Aedes albopictus* in Brazil is presented for the period from 1997 to 2002. Data from the yellow fever and dengue information system of the National Health Foundation is utilized. It can be seen that this species is present in 20 of the 27 Brazilian states.

### Keywords

*Aedes*. Ecology, vectors. Insect vectors. Dengue. Yellow fever. Geographic distribution. *Aedes albopictus*.

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The first record of *Aedes albopictus* in Brazil was in 1986, in the State of Rio de Janeiro.<sup>2</sup> In that same year, the species was then found in Minas Gerais and São Paulo and, in the following year, in Espírito Santo.<sup>1</sup> Thus, within just one year, *Ae. albopictus* had become established in all the states of the southeastern region.

The National Health Foundation (FUNASA) receives data on infestation by *Aedes aegypti* and *Ae. albopictus* from all Brazilian states, by means of the yellow fever and dengue information system (FAD). This information comes from samples collected with a view to determining infestation rates in areas where *Ae. aegypti* is present. In addition to this, information is also generated from entomological surveillance, with the use of larvitrap or ovitraps, for municipalities that initially had no infestation.

According to recommendations from FUNASA, infestation surveys to determine Breteau and building indices, which generate information for the FAD, should be done every two months in infested municipalities and every four months in non-infested municipalities.<sup>3</sup>

The figure shows a map drawn up from corrected FAD information, indicating the municipalities where the presence of *Ae. albopictus* was recorded during the period from 1997 to 2002.



**Figure 1** – Municipalities where *Aedes albopictus* was reported between January 1997 and December 2002, based on data from FUNASA Yellow Fever and Dengue Data System and other.

Rapid and increasing expansion of the occurrence of *Ae. albopictus* has been observed since its introduction into the country. Only seven Brazilian states have not yet reported infestation by this species: Amapá, Roraima, Acre, Tocantins, Piauí, Ceará and Sergipe, four of them in the northern region and three in the northeastern region. The States of Pará and Alagoas have recorded its occurrence in only one municipality each, Medicilândia and Maceió, respectively. It is important when analyzing the Figure to understand that the geographical unit utilized on the cartographic base is the municipality. The area covered by a single municipality may be very extensive in the northern region of the country. Thus, although the species may have been encountered in few localities within such municipalities, the entire municipality will be indicated on the map. It is also very probable that the indication of municipalities in the southeastern region without infestation but surrounded by others that are infested will reflect a lack of information rather than the absence of the species.

Although *Ae. albopictus* is subject to control pressure in areas infested by *Ae. aegypti*, it is not a target species in the dengue control programs. This may interfere in its notification rate among the Brazilian states. Because this is an exotic species, never before seen by a good proportion of the

technicians responsible for mosquito identification, as well as their poor knowledge of entomology and the large work demands placed on them, it may be supposed the area of the northern and northeastern regions occupied by the species may have been underestimated. In addition to this, the recording of its occurrence in localities without dengue cases will depend on routine entomological surveillance, which is an activity that has not yet been implemented in all Brazilian municipalities.

This species has demonstrated a potential for occupying Brazilian rural and forest areas.<sup>4,6</sup> Larvae may be found in holes in trees and imbrications of plant leaves. This penetration of the natural environment will give the possibility of including *Ae. albopictus* within the transmission cycles that until now have been maintained by Brazilian forest species. The demonstration that *Ae. albopictus* has vector competence for the transmission of the yellow fever virus<sup>5</sup> and the expansion of the area it occupies within the national territory recorded in the present work point towards an increase in the area at risk of yellow fever, since the species can be active in both forest and human environments. It may thus both carry the virus from forest to human environments and favor virus maintenance in the urban environment.

The extent of the ecological penetration of *Ae. albopictus* means that its control will be difficult with the use of the same strategies as utilized for *Ae. aegypti*. Since this region has an environment rich in virus populations, many of them still unknown,<sup>7</sup> the presence of *Ae. albopictus* may make it more receptive to the emergence of arboviruses, especially in areas of constant environmental change.

## ACKNOWLEDGEMENTS

To Cátia Parreira and David H S Azevedo of the Health Surveillance Department of the Ministério da Saúde of Brasil, for processing the data from the yellow fever and dengue information system; to MB Arduino of the SUCEN, São Paulo, Brazil ( Endemic Disease Control Office); to AS Fayal of the Secretaria de Saúde of Pará, Brazil; to AKR Gallardo of the Fundação Nacional de Saúde, Rio de Janeiro, Brazil; to FEM Sousa of the Secretaria da Saúde do Rio Grande do Sul, Brazil; to NA Santos of Secretaria da Saúde of Paraíba, Brazil; and to LB Costa of the Secretaria da Saúde of Mato Grosso, Brazil, for supplementary information.

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Received 8/10/2002. Reviewed on 28/4/2003. Approved on 6/6/2003.

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