

# *Aedes albopictus* in an area of Misiones, Argentina

## *Aedes albopictus* en un área de Misiones, Argentina

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### Keywords

*Aedes*. Geographic distribution. Ecology, vectors. Dengue. Insect vectors. Culicidae. *Aedes albopictus*.

### Descriptores

*Aedes*. Distribución espacial. Ecología de vectores. Dengue. Insectos vectores. Culicidae. *Aedes albopictus*.

### Abstract

Until early 1998 the presence of *Aedes albopictus* had never been detected in Argentina. During April of the same year, few individuals of this species were recorded in 33 breeding sites found in 25 out of 161 inspected houses in the city of Eldorado, Province of Misiones. The homogeneous spatial distribution of the proliferation foci suggests the existence of a generalized infestation in this locality during the study period.

### Resumen

La presencia de *Aedes albopictus* en Argentina no había sido detectada hasta comienzos de 1998. En abril de ese mismo año se registraron 33 criaderos, con pocos ejemplares en cada uno, en 25 de las 161 viviendas inspeccionadas en la ciudad de Eldorado, Provincia de Misiones. La distribución espacial homogénea de los focos de proliferación detectados durante el período de estudio sugiere la existencia de una infestación generalizada en esta localidad.

## INTRODUCTION

In the Americas *Aedes* (*Stegomyia*) *albopictus* (Skuse) is an aloctonous species that was passively introduced through trade between commercial centers of the Americas and southeastern Asia.<sup>3</sup> This species was first detected in 1986 in Rio de Janeiro and Minas Gerais and has spread to at least 14 Brazilian states ever since.<sup>1</sup> The occurrence of *Ae. albopictus* in Argentina was first recorded in San Antonio, Province of Misiones, in March 1998.<sup>5</sup>

## METHODS

The study area in the Province of Misiones is located in a humid region according to Thorntwaite's

climatic classification. Phytogeographically, the area belongs to the Paranaense rainforest, which is included in the humid subtropical rainforests of South America. The mean annual temperature is 22°C, absolute maximum temperature is 38.5°C, and absolute minimum -5.4°C. The period without frosts is of 315 days. Mean annual precipitation is 2017 mm, and the rainiest season is fall (563 mm).

Eldorado city (26°24' S-54°38' W, 212 m above sea level) is crossed by the National Road 12, which is the main access to the most important urban centers of Argentina's northeastern region. According to the 1991 last official census, this city has approximately 72 km<sup>2</sup> with a population of 37,934 inhabitants and 9,817 dwellings. In the last week

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Financial support was partially provided by Pan-American Health Organization of Argentina  
Received on 31/1/2003. Reviewed on 14/7/2003. Approved on 6/8/2003.

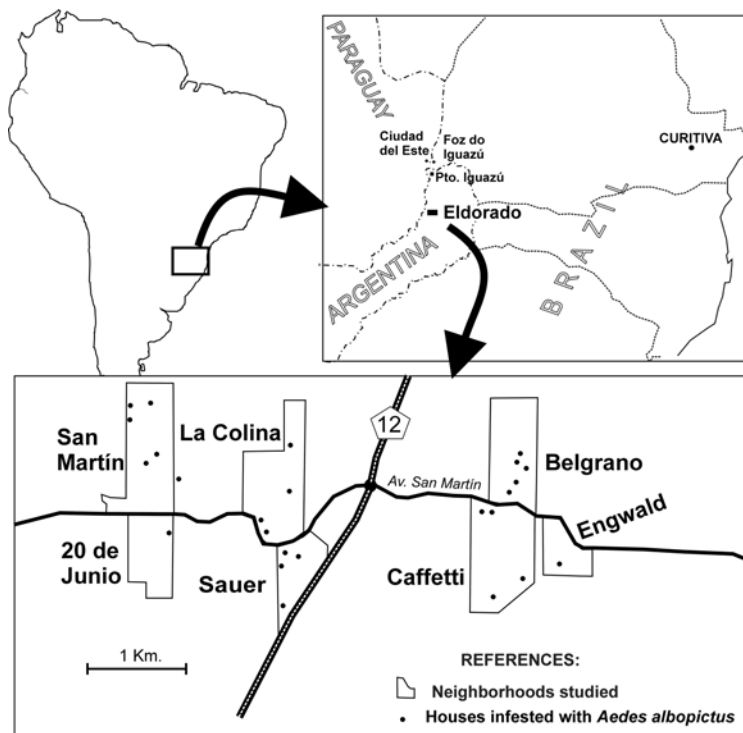


Figure - Geographic location of Eldorado City (Misiones, Argentina), and spatial distribution of the positive premises for *Ae. albopictus*.

of April 1998, a month after the first report of *Ae. albopictus* in Argentina, there were visited and sampled 161 randomly selected houses from seven neighborhoods located up to 2.5 km away from the main road. Houses were inspected for potential artificial breeding sites, and all water containers were checked. Whenever immature stages of mosquitoes were found in a container, all specimens were collected by filtering its content. Only artificial containers from houses and their surroundings were examined. No control measures against vectors had been applied prior to the study.

## RESULTS

*Ae. albopictus* was found in 16% of 161 houses investigated. All studied neighborhoods were infested (Figure). Immature forms of *Ae. albopictus* were found in 33 out of 2,237 (1.4%) examined water containers. Only 40 larvae in 28 containers and 11 pupae in 9 containers were found. Most of the positive containers (91%) did not exceed a 5-L capacity. Types of containers included 24 small wide mouth receptacles (jars, bins, cans, flasks, casseroles, buckets, and cut plastic bottles), four used car tires, one small cooking stove, one old car battery, one broken drainage pipe, and one plastic toy. *Ae. aegypti* shared 85% (28/33) of *Ae. albopictus* breeding sites. The relative abundance of *Ae. albopictus* was very low as compared to *Ae. aegypti*

(approximately 1:10). On the other hand, *Ae. albopictus* also shared its breeding sites with: *Limatus durhamii* (eight samples), *Ae. fluviatilis* (two samples), *Toxorhynchites sp.*, and *Culex sp.* (one sample each).

## DISCUSSION

The low relative abundance of *Ae. albopictus* in all studied neighborhoods shortly after its first detection in Argentina may indicate a rapid dispersal pattern in an early stage of colonization. This fact may reveal a clear difficulty to detect early changes in local entomoepidemiological conditions.

The introduction of *Ae. albopictus* in the southern coastal states of the US was followed by a dramatic and rapid decrease of *Ae. aegypti* populations.<sup>3</sup> However, recent studies demonstrated that variants from the Northern and Southern hemispheres have no genic exchange and show a distinct dispersal behavior.<sup>2</sup> Thus, the effect of *Ae. albopictus* on *Ae. aegypti*

populations of Brazil and Argentina is unknown.

Co-existing species and types of containers infested by *Ae. albopictus* in Eldorado were similar to those in the state of São Paulo, Brazil.<sup>4</sup> Changes in the population abundance of these vectors in Misiones should be further investigated.

The acclimation to low temperatures and the existence of diapause in strains from temperate zones<sup>3</sup> suggest this species is capable of colonizing and settle further south from the regions currently occupied by *Ae. aegypti* in Argentina. Within the potential colonization area of *Ae. albopictus* there are important urban centers like Buenos Aires, Córdoba, and Rosario (annual isotherms between 16-17°C), which are inhabited by 50% of the Argentine population.

The introduction of an exotic species able to feed on a wide variety of hosts including humans signals on the possibility of introducing new viruses from sylvatic zoonotic cycles to the anthropic environment.<sup>3</sup> On the other hand, the ability of *Ae. albopictus* to proliferate in microhabitats of both urban and less accessible periurban environments will make control strategies substantially difficult. The risk posed by *Ae. albopictus* to public health in the most southern region of Americas remains unknown and should not be underestimated.

## ACKNOWLEDGEMENTS

To the personnel of Servicio Nacional de Paludismo

de Misiones (Misiones' National Malaria Center) and Servicio Nacional de Chagas (National Chagas' Center) for their help in the fieldwork.

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