

## SCIENTIFIC NOTE

### CURRENT STATUS OF *Aedes albopictus* AND *Aedes atropalpus* IN ITALY

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**ABSTRACT.** Eight years after the 1st record in Italy, scattered foci of *Aedes albopictus* are reported in 9 regions and 107 municipalities belonging to 22 provinces, mainly located in the northeastern part of the country (Veneto region). In almost all infested areas the species is well controlled and at low levels of density, through source reduction and antilarval treatments. *Aedes atropalpus*, 1st recorded in 1996, remains limited to the original focus in the province of Treviso. Surveillance and control of both species are carried out by local health agencies within a national program coordinated by Istituto Superiore di Sanità (national Institute of Public Health).

**KEY WORDS** Mosquitoes, *Aedes albopictus*, *Aedes atropalpus*, distribution, Italy

After its introduction into Italy (Sabatini et al. 1990, Dalla Pozza and Majori 1992) *Aedes albopictus* Skuse quickly spread throughout the northern and central regions of the country, causing considerable concern among public health authorities (Romi 1995, Knudsen et al. 1996). Since 1991 the Department of Parasitology, Istituto Superiore di Sanità, has been coordinating the surveillance and control of the Asian tiger mosquito carried out by local public health agencies. Recently, another imported tire-inhabiting mosquito, *Aedes atropalpus* (Coquillett), was discovered in the Veneto region (northeastern Italy) during a routine survey for *Ae. albopictus* (Romi et al. 1997).

The introduction, spread, and establishment of *Ae. albopictus* in Italy has been facilitated by the commerce of used tires. In 1992 we inferred that the primary route by which *Ae. albopictus* was introduced in the Veneto region was via used tires imported from the United States (Dalla Pozza et al. 1994). In the Veneto region, tire retreading is well developed and many companies import used tires from abroad. Analysis of data from Istituto Nazionale di Statistica shows that between 1990 and 1995, 93,320 metric tons of used tires were imported into Italy, most of which came from European Community (EC) countries. Less than 2% of the used tires came from countries other than the EC. In 1996-97 the percent increased; 6.6% of the total used tires imported into Italy came from non-EC countries. Of the total, 968 metric tons came from countries where *Ae. albopictus* is reported.

Since 1992, local laws were passed to contain the spread of the Asian tiger mosquito, but no tire legislation has been passed at national level. Most of the *Ae. albopictus* foci in Italy seem to have originated in used tire storage areas because the species spread from the Veneto region to other Italian regions through the transport of those tires. By examining trading registers, we confirmed that 2

large import-resale companies located in the Veneto region sold used tires to smaller tire recapping companies located in the areas that later became infested. The source of the infestation remains unknown for the cities of Genoa (northwestern coast) and Civitavecchia (central Italy). Also, *Ae. atropalpus* has been found in the Veneto region, in tires belonging to a tire recapping company that imported loads of used tires from North America (Romi et al. 1997).

At present, scattered foci of *Ae. albopictus* are reported in 9 regions and 107 municipalities belonging to 22 provinces, mainly located in the northeastern part of the country (Fig. 1). The foci extend from 40.5°N to 46.0°N latitude. During the last 3 years, the number of reported foci has increased sharply (Fig. 2), due to a large improvement in surveillance and control activities, supervised by Istituto Superiore di Sanità. Most of the foci reported since 1994 presumably originated from domestic tire trading. Because new infestations probably involve only a few individuals, in the absence of an active monitoring program several years may pass before a mosquito population becomes detectable.

In August 1997 a foci of *Ae. albopictus* was reported in 2 heavily populated suburbs of Rome. In 1998 the extent of these areas quickly increased. This poses a potential threat, because a large number of people are expected to visit Rome for the Jubilee year.

In 1996-97, *Ae. albopictus* was eradicated from isolated foci in Trentino (Trento), Tuscany (Pisa), and Sardinia (Cagliari), and from some rural towns in the Veneto region. In 1998, ovitraps and surveys have given negative results in these areas.

The invasion of *Ae. atropalpus* remains limited to a single focus (a tire deposit) in the province of Treviso (Romi et al., 1997). Adulticidal and larval treatments with pyrethroids probably did not erad-

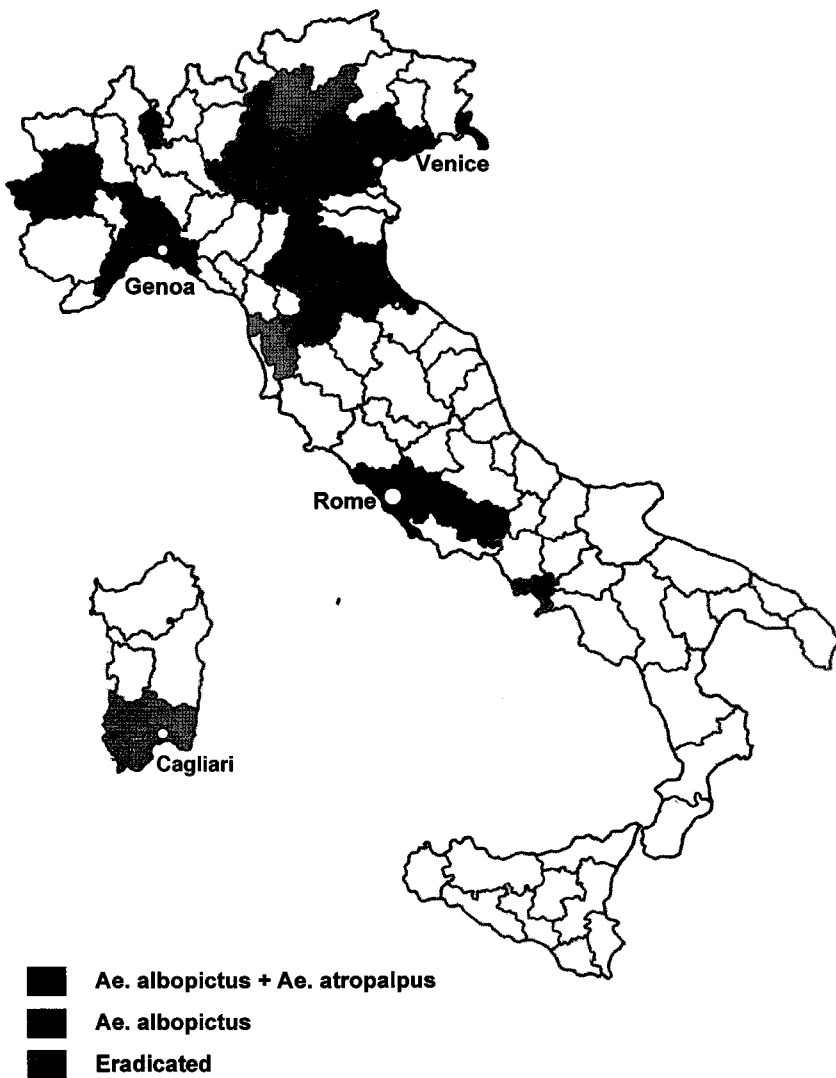


Fig. 1. *Aedes albopictus* and *Aedes atropalpus* in Italy by provinces, 1998.

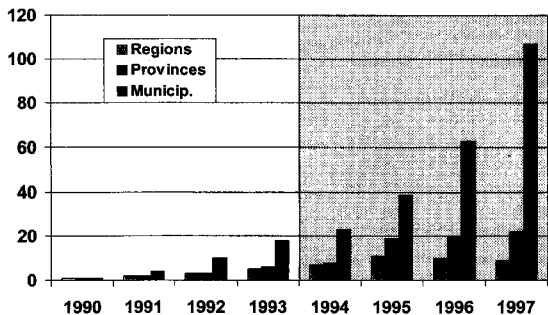


Fig. 2. Number of regions, provinces, and municipalities in Italy where foci of *Aedes albopictus* have been reported by year. Active detection of *Ae. albopictus* was initiated in 1994 (gray background area).

icate the species, but reduced its density to nearly zero. During the summer of 1997 only 9 larvae (2nd and 3rd stage) were found in 2 tires. No positive records occurred in 1998. Surveys in neighboring areas were negative for this species.

Control operations for *Ae. albopictus* consisted of a campaign of source reduction in private, peridomestic areas and antilarval treatments with temephos (50% emulsifiable concentrate or tablets). Focal adult treatments with deltamethrin (at a rate of 5–10 g/ha) were carried out in tire depositories and in other areas of heavy infestation. The estimated amounts of insecticides used in 1997 for the control of *Ae. albopictus* in Italy is about 1,200 kg of temephos, 250 kg of granular *Bacillus thuringiensis* var. *israelensis*, and 300 kg of deltamethrin and permethrin. The total 1997 operational costs for

monitoring and controlling *Ae. albopictus* in Italy was about U.S. \$ 700,000.

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