Asian tiger mosquito (Aedes albopictus) - a threat for Switzerland?

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The Asian tiger mosquito, Aedes albopictus (Stegomyia albopicta) originating from south-east Asia, has spread primarily by the trade of used tyres to the United States, Europe, Latin America and Africa [1]. In Italy, the mosquito species was first detected in Genoa in 1990 and has since spread to several parts of the country, including border areas with Switzerland [2]. In 2000, an active monitoring system was established in southern Switzerland. The first tiger mosquito was detected in the canton of Ticino in 2003 [3]. Monitoring was gradually intensified due to growing mosquito densities in northern Italy. As the long-distance migration of Ae. albopictus depends on passive transport, the monitoring system consisted of strategically positioned oviposition traps along main traffic axes, including parking lots within industrial complexes, border crossings and shopping centres. In 2007, this monitoring system consisted of over 70 checkpoints with a total of 300 traps. Bi-weekly control visits to all traps were conducted between April and November 2007. As soon as eggs were detected, the surrounding vegetation within a perimeter of about 100 metres was sprayed with permethrin against adult mosquitoes. Stagnant water was treated with Bacillus thuringiensis and in some cases with diflubenzuron to control the larval stages.

Between 2003 and 2006, the tiger mosquito density (1.4-3.3% positive traps) detected by the monitoring system was low enough to support the hypothesis that individual adults had been introduced sporadically from Italy but had not been able to establish locally. However, the situation changed significantly in 2007. Within the border city of Chiasso, a dramatic increase of positive traps and a higher number of eggs were both observed, indicating that a local mosquito population had established (Figure 1 and 2). At the same time, based on information offered by a member of the public, the first tiger mosquito was confirmed in Switzerland north of the Alps, in the canton of Aargau.

Ae. albopictus has a high vector competence for chikungunya and dengue viruses [4]. The establishment of this mosquito species therefore represents a potential threat for the autochthonous transmission of viral infections. An autochthonous transmission of chikungunya by Ae. albopictus occurred in Italy in 2007, with over 200 confirmed cases [5].

In response to the establishment of the vector species, and in line with the recommendations of the European Centre for Disease Prevention and Control (ECDC) following the outbreak in Italy [5], chikungunya was made a notifiable disease in Switzerland in January 2008. In addition, the monitoring strategy of Ae. albopictus will be adapted to the new situation by intensifying the surveillance in Chiasso and its neighbouring communities. Based on the experience

**Figure 1**
Proportion of positive ovitraps checked during the monitoring program on Ae. albopictus in Ticino, Switzerland, 2007 (without Chiasso)
(Positive traps resulted in immediate insecticidal and larvicidal treatments of the surrounding)

**Figure 2**
Proportion of positive ovitraps checked in Chiasso during the monitoring program on Ae. albopictus in Ticino, Switzerland, 2007
(Positive traps resulted in immediate insecticidal and larvicidal treatments of the surrounding)
gained in southern Switzerland, a national monitoring and control strategy will be developed in 2008/09, covering environmental and public health aspects, thereby elaborating an implementation plan on the national, regional and local levels.

References


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