

## ***Aedes albopictus* (Diptera: Culicidae) occurs on several islands in the Mediterranean Sea; the importance of monitoring and surveillance activities**

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The global dispersal of *Aedes albopictus* (Skuse, 1894) is allowed by the transport of its eggs or larvae through the trade of goods such as used tyres or lucky bamboo (*Dracaena* spp.). *Ae. albopictus* is a peridomestic and anthropophilic species, that was responsible for the first European outbreak of chikungunya in the Emilia Romagna Region, Italy, in 2007, and it has been shown experimentally to be a competent vector of at least 26 arboviruses, including West Nile virus (WNV) and Zika virus (ZIKV).

A recent study reported the occurrence of *Ae. albopictus* in three minor Italian islands in the Tyrrhenian Sea. This was the first record for all three islands, Giglio (Tuscany Region), Ventotene (Lazio Region) and Ustica (Sicily). Following the subsequent recording of the species on Lampedusa, Linosa (Pelagie Islands) and Pantelleria in the Sicilian Strait in 2015, this report represents the second study and record of the species on small Italian islands.

In the Mediterranean Sea, *Ae. albopictus* has also been found in the Maltese Islands where it is currently very abundant, Mallorca, Ibiza and Menorca (Balearic Islands, Spain) in 2012, 2014 and 2015, respectively. In addition to the Balearic Islands and the Maltese archipelago, the only other cases of islands colonised by *Ae. albopictus* in the Mediterranean sea are represented by Sardinia and Sicily. In Sardinia, *Ae. albopictus* was eradicated following an intervention by the local public health agency in 1995 but the species reemerged in 2006 and then spread across the whole island. Currently in Sicily, *Ae. albopictus* is also widespread.

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As introduction route, the maritime route is the most likely pathway, but presence of airports on some islands such as Lampedusa, Pantelleria and Malta could also represent a further potential route of introduction for invasive mosquito species. All the studied islands are touristic localities, very close to the European mainland and easily accessible throughout the year. The availability of larval breeding sites on the islands is variable, depending mainly on rainfall but also on water availability as a result of human activities.

In general, the data collected on these small islands confirm the high capability of *Ae. albopictus* in overcoming biogeographical barriers to reach islands. These considerations also raise concern for the spread of another invasive mosquito species, *Aedes (Stegomyia) aegypti* (Linnaeus, 1762), the primary vector of dengue virus (DENV), ZIKV and Yellow Fever virus (YFV). Recently, *Ae. aegypti* acted as a vector of DENV in Madeira. This species is currently not present in southern Europe but had been so in the past century. There is growing concern that it could become widely established again in the Mediterranean, since it has expanded its distribution range in countries bordering the Black Sea, such as Russia, Georgia and Turkey. Given the impact of passive transportation on the spread of *Ae. albopictus*, trade routes supporting the displacement of eggs and larvae should be controlled and reduced or even eliminated. The infestations on small islands could also represent opportunities to test new methods of control. Finally, monitoring and the surveillance systems should be set in place to control and potentially eradicate this mosquito and also to act as an alarm system to warn countries about the possible income of further invasive mosquito species such as *Ae. aegypti*.