

A second record of *Aedes (Stegomyia) albopictus* (Diptera: Culicidae) in Malta

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Abstract:

The presence of *Aedes albopictus* (Skuse, 1894) was recently confirmed in Malta (Gatt *et al.*, 2009). Three more adult female mosquitoes were caught indoors by the author from another locality (Marsascula) located in east Malta, and identified from morphological features. This is the second time this species has been recorded for the Maltese archipelago and represents an addition to the nine previously recorded Culicidae mosquito species from the Maltese Islands. Since the species is a known vector for several serious diseases including dengue fever, its occurrence in the Maltese islands needs to be noted by the Health Authorities and measures to contain its spread and/or prevent its establishment, undertaken.

Keywords: Mosquito, *Aedes albopictus*, Malta, dengue, Europe

Introduction

Aedes albopictus (Skuse) (*Stegomyia albopicta* of Reinert & Harbach, 2005), known as the Asian tiger mosquito or forest day-mosquito, is currently considered as the most invasive species of mosquito in the world. It is native to tropical regions of Southeast Asia but has been spreading rapidly across the globe with increasing transport of certain goods and travel. This species is a tree-hole breeder and will use any artificial container that can retain water and organic matter, like used car tyres, plastic cups and bottles. Its spread is associated with two primary sources – transport of old car tyres and sea-trailer horticultural imports from China of lucky bamboo (*Dracaena sanderana*) where stems are transported in plastic or Perspex containers filled with a few centimetres of water to keep the base of the stem moist (Knudsen, 1995; Scholte *et al.*, 2007). This method of transfer of *Ae. albopictus* has been confirmed for cases in California, USA and for three locations in the Netherlands where *Dracaena*-importing

companies were operating (Scholte *et al.*, 2007). Since dengue fever can be transmitted transovarially, there is real danger that release of adults from infected eggs can lead to further spread of the disease.

The earliest record from Europe was in Albania in 1979 (Adhami & Reiter, 1998). Later it was discovered in Genoa in Italy, where it was introduced in a shipment of used tyres from the United States (Sabatini *et al.*, 1990) but more recently this mosquito has been recorded from several countries in Europe including Sardinia (Romi, 1995), France (Schaffner *et al.*, 2001), Greece (Samanidou-Voyadjoglou *et al.*, 2005), the Netherlands (Scholte *et al.*, 2007), Corsica (De Jong *et al.*, 2009) and several other European countries including Belgium, Switzerland, Spain, Sicily, Croatia, the Balkan countries and Germany showing that its spread is increasing (Straetemans, 2008; Pluskota *et al.*, 2008). It now appears to have reached the Maltese Islands. This mosquito is firmly associated with the transmission of a number of

serious diseases including dengue fever, yellow fever, West Nile fever and Rift Valley fever (Mitchell, 1995). In 2007 it was associated with a Chikungunya arbovirus outbreak in Ravenna, Italy (Angelini *et al.*, 2007). For this reason its spread is of public health significance and every effort must be made to contain its spread.

This biting mosquito species shows aggressive and uninhibited daytime feeding behaviour (apart from that at dawn and dusk), which is described as persistent and a nuisance. The location from where these two specimens were caught has a number of fresh water reservoirs used for storage of secondary treated water. The low quality water is used for irrigation of agricultural land and is distributed through open concrete canals connected to vertical siphon tanks. Standing water in the latter could serve as an ideal habitat for breeding of different mosquito species. There is also a secondary water treatment plant and a recycling facility in the locality. Though tyres are not known to be stored here, containers that capture water (mostly plastic and metal) are abundantly available on this site. Although *Ae. albopictus* is not known to breed in brackish or salt water, this could represent a third scenario for its breeding. The locality from where it was recorded has a substantial number of abandoned salt pans and one disused fishpond that serve as ideal habitats for several culicid mosquito species recorded locally.

Material examined

Two adult female specimens were caught indoors at Marsascalea, east Malta in the light while attempting to feed: the first was caught in the late afternoon of 9th September 2009 and the second slightly larger female was caught indoors in the late evening from the same location three days later. A third female was caught on the 6th October, outdoors in the evening, also from the same location.

Attention was drawn to the species as it is a daytime feeder and, in the resting position, the hind pair of legs curve upwards making the banded legs conspicuous against the dark

coloured scutum and wings. Identification of *Ae. albopictus* was confirmed by microscopic examination when photographs and measurements were taken. The material was later authenticated by Dr Yvonne Linton and Dr Ralph Harbach from the Natural History Museum, London.

Discussion

The arrival of *Ae. albopictus* in Malta is not surprising given the large volume of container-based sea traffic where Malta Freeport acts as a hub terminal for transshipment in the Mediterranean. A large number of cruise liners also call regularly at the Valletta Grand Harbour and several ferries link with mainland Italy and Sicily. Though transport of old car tyres has been cited as the possible route of import, this is probably not applicable locally but sea traffic offers instances where adult insects or their immature stages can hitch a ride. Eggs are known to withstand desiccation and therefore can be transported in a variety of containers. The arrival of *Ae. albopictus* with lucky bamboo imports is not excluded; there are regular imports of horticultural plants from the Netherlands and Italy on a weekly basis and the plant in question is quite popular locally. The crucial question remains whether it will overwinter and become established such that its numbers increase to pose a health risk.

The climate in the Maltese Islands is relatively warm and mild even during the rainy season which stretches from September to March/April with outdoor temperatures rarely falling below 0°C. The hot summers are dry but the presence of water in reservoirs and distribution canals can extend its active breeding season. Therefore these climatic and environmental factors alone may favour its establishment locally. This represents a potentially dangerous addition to the nine previously recorded Culicidae mosquito species from the Maltese Islands of which a few are potential vectors for harmful viral disease but considered as low risk due to the small numbers present (Gatt, 1996; 2009). The primary concern if the species becomes established locally is the risk of transmitting

disease and therefore its public health burden. Furthermore, the continuous influx of migrants from North Africa to the Island which often hail from epidemic areas, may pose an added risk if infected migrants are bitten by the mosquito. Measures should therefore be taken by the local health and sanitation authorities to carry out an intensive field survey to record the extent of local establishment of *Ae. albopictus* and prepare measures to contain its further spread.

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