

Current distribution of the invasive mosquito *Aedes japonicus* (Diptera; Culicidae) in Italy

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INTRODUCTION

The Asian bush mosquito *Aedes* (*Finlaya*) *japonicus japonicus* (Fig. 1) is one of the most invasive mosquito species worldwide and recently invaded several countries of Central Europe. In Italy, it was found for the first time in three sites in Udine province, Friuli Venezia Giulia (FVG) region in 2015. In the following years, a survey was carried out and is still ongoing, to better define its spread.



Fig. 1 - *Aedes japonicus*

MATERIALS AND METHODS

Artificial and natural breeding sites were monitored for larval collection and BG-Sentinel traps for collecting adults mosquitoes. Identification was performed for larvae and emerging adults by morphological and molecular analysis.

RESULTS

Table 1 – Sites and municipalities monitored and positive for *Ae. japonicus* from 2015 to 2018

Year	Sampling sites positive/monitored (%)	Municipalities positive/monitored (%)
2015	3/10 (30.0%)	1/4 (25.0%)
2016	6/37 (16.2%)	3/13 (44.4%)
2017	8/18 (44.4%)	5/10 (50.0%)
2018	34/51 (66.7%)	20/25 (80.0%)
Total	51/116 (44.0%)	28/40 (70.0%)

In total, 40 municipalities were monitored and *Ae. japonicus* was found in 28 (70%) (fig. 2 and tab. 1). Interestingly, it was found in 2018 in eight sites negative in 2016. The colonized area is hilly or mountainous with altitude ranging from 103 to 1263 m asl.

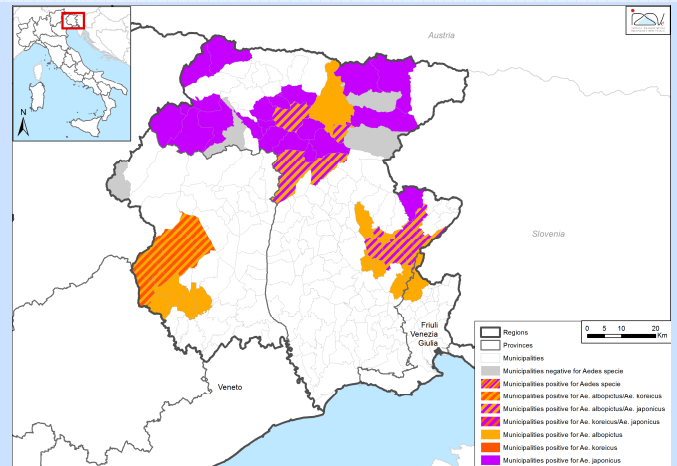


Fig. 2 – Municipalities monitored and positive for *Ae. japonicus*, *Ae. koreicus* and *Ae. albopictus* (2015-2018) in Friuli Venezia Giulia Region

Aedes japonicus larvae were found in every kind of artificial containers, tires and catch basins (tab. 2), often cohabitating with other species (fig. 3), i.e. *Culex pipiens*, *Cx. hortensis*, *Culiseta longiareolata* and in one case with *Ae. albopictus* too (fig. 4). Several specimens were also caught by BG-Sentinel traps.

Table 2 – Breeding sites monitored and positive for *Ae. japonicus*

Breeding sites	Positive/monitored
small water container	13/21 (61.9%)
big water container	14/32 (43.7%)
tires	9/17 (52.9%)
vases/soucers	5/12 (41.7%)
catch basins	6/23 (26.1%)
basin of fountains	2/3 (66.7%)
ponds	0/1 (00.0%)
dunghill	0/1 (00.0%)
Total	47/110 (42.7%)

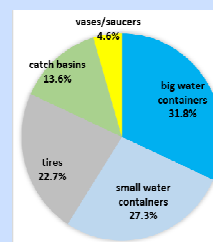


Fig. 3 – Breeding sites cohabited by *Ae. japonicus* and other mosquito species

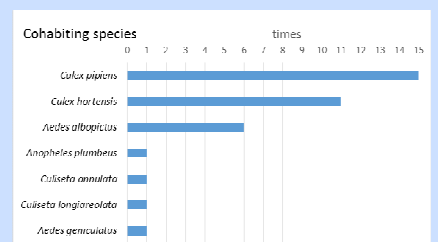


Fig. 4 – Times and species cohabiting with *Ae. japonicus*

CONCLUSIONS

The species is known to be a pest problem and having the vector competence for arboviruses such as Japanese encephalitis, West Nile, Dengue and Chikungunya viruses. Other two invasive species, *Ae. albopictus* and *Ae. koreicus*, are already established in FVG region. Thus, its establishment complicates the current surveillance system requiring well-trained personnel for identification. From a Public Health perspective, a new potential vector of pathogens to animals and humans may represent a challenge for the Health System.

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