UNIVERSITÀ DEGLI STUDI DI TRENTO
FONDAZIONE EDMUND MACH

Determination of ecological parameters of the invasive mosquito species *Aedes albopictus* and *Aedes koreicus* in a mountainous environment of Northeastern Italy and experimental and applied control

Gioia Capelli[1], Frederic Alexandre Baldacchino[2], Daniele Arnoldi[2], Silvia Ravagnan[1], Francesca Bussola[2], Roberto Rosà[2], Graziana Da Rold[1], Sara Carlin[1], Andrea Drago[3], Fabrizio Montarsi[1], Annapaola Rizzoli[2]

[1]*Laboratory of Parasitology, Istituto Zooprofilattico Sperimentale delle Venezie, Legnaro (PD), Italy*
[2]*Department of Biodiversity and Molecular Ecology, Research and Innovation Centre, Fondazione Edmund Mach, San Michele all'Adige (TN), Italy*
[3]*Entostudio, Ponte San Nicolò (PD), Italy*

The Pre-Alps and Alps of Northeastern Italy (Veneto region and Trento province) are currently colonized by the established Invasive Mosquito Species (IMS) *Aedes albopictus* and by the newly arrived *Aedes koreicus*. Their introduction and spread pose new threats to human and animalhealth, due to their known or potential vector competence of endemic and exotic pathogens, and complicate the entomological surveillance. Modelling is a powerful tool to explain and predict the possible invasion and expansion of IMS in new territories, provided that reliable ecological parameters are available from laboratory and field studies. Here we report the results of a three-year survey as well as laboratory experiments on the two IMS present in the area *Ae. albopictus* and *Ae. koreicus*, aimed to gather information on their spatio-temporal distribution in Northeastern Italy, habitat characterization, biting behavior and the effect of temperature on the life cycle. All these data were then used to model the potential distribution of IMS in Italy under different climate change scenarios. In addition, the potential risk of arboviruses epidemics was estimated in temperate areas with established populations of *Ae. albopictus*. Other aspects were explored to improve the monitoring of IMS, such as the performance of three trapping devices and new methodologies of adults and eggs identification based on mass spectrometry. Finally, new methodologies of mosquito control were evaluated, i.e. predation tests of copepods on *Aedes* larvae and an integrated control strategy with a community-based approach including larvicide applications in public and private areas combined with a door-to-door active education to involve residents in mosquito control.

Funding: LExEM Project - Grandi Progetti della Provincia Autonoma di Trento.

CONTACT MAIL: gcapelli@izsvenezie.it