

## **THEORETICAL MODEL OF *Aedes albopictus* ENTRANCE AND ESTABLISHMENT IN SPAIN INTEGRATED IN EU CLIMATE PROJECTS: THE CASE OF NAVARRA**

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**Abstract** Tiger mosquito (*Aedes albopictus*) has colonized large areas in the Iberian Peninsula, mainly in the Spanish Mediterranean strip. Its ecological plasticity and new mechanisms of dispersion, among which the communication routes stand out, has allowed it to colonize multiple and dispersed urban areas. The knowledge of the factors that allow its dispersion and establishment have allowed the elaboration of theoretical models. Navarra is a region located in the north-east of Spain, with no recorded establishment of *Aedes albopictus* but adjacent to other regions with proven activity, both in Spain and France. This study is endorsed into the EU Integrated Projects CLIMA, as a part of the LIFE Nadapta project headed by the Government of Navarra. Which promotes resilience to climate change in the Region. Cartographic information was collected from different public administrations, such as communication routes, stops (gas stations, hotels, etc.), scuppers (main breeding points on public roads), green areas (shelter and food of adults) and private plots. By means of geographic information systems (GIS), these layers were superimposed and weighted to determine the entry and establishment of *Aedes albopictus* in the territory through geoprocessing tools. With the hierarchy of the communication routes based on the expected traffic by type of road and the analysis of the accumulation of stop points, areas with highest probability of vector entry into the territory were obtained. Whereas, with the analysis of the areas with accumulation of scuppers and vegetation, breeding site were determined and thus establishment areas. The analysis of establishment areas allows the zoning of vulnerable areas and the order of trapping, inspection and future control efforts in the urban environment, be it larvicide, adulticide or both. Even determining the areas in which other actions must be carried out, for example citizen awareness.

**Key words** Tiger mosquito, Geographical Information Systems (GIS), geoprocessing tools