

BLACK FLY (*SIMULIIDAE*) MANAGEMENT IN THE CITY OF MADRID

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Abstract During the summer of 2018 Madrid City Council received an unusual number of complaints related with insect bites near the Manzanares river. Consequently, the Vector Control Department of Health Madrid performed a series of inspections at different points of the river. Which resulted in the verification of the presence of “Black Fly” (*Simuliidae*), an emerging pest in urban areas of Spain and recorded in high density for the first time in the city. In 2019 diagnosis of the situation, monitoring and other actions related to entomological surveillance and management of Black Fly where conducted. Principally in the last 15 km of the river section, since both the most probable origin of the infestation and vulnerable urban areas were included. Diagnosis was carried out, during the month of May, in 19 sampling areas with optimal conditions for Black Fly breeding. Measuring physical-chemical parameters and sampling substrates and vegetation (macrophytes and helophytes) for the determination of *Simuliidae* larvae and pupae density. Recommendations for a Pest Control Plan were concluded. As well as a risk analysis with GIS of population and singular elements (schools, sports areas, etc.) exposed. In addition, up to a total of 9 different *Simuliidae* species were identified, samples preserved, and their different distributions recorded. Following the diagnosis, a total of 4 larvicidal treatments were performed with *Bacillus thuringiensis var. israelensis* (BTi) based biocide, during the months of June, July, September and October. To verify temporary optimization and effectiveness, before and after every treatment monitoring was performed. More than 10 samples were carried out since low activity or meteorological conditions advised against performing the treatment in several occasions. Overall effectiveness of treatments was very high (>85% larval reduction), but meteorological and ethological factors intervene in this result, for example in the first treatment on average 97.7% larval mortality was achieved.

Key words Manzanares River, emerging pest, *Bacillus thuringiensis*, entomological surveillance