

DROSOPHILA SUZUKII MATING BEHAVIOUR: SOUNDS AND VIBRATIONS BESIDES VISUAL SIGNALS

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Drosophila suzukii (Matsumura) (Diptera Drosophilidae), the spotted wing drosophila (SWD), is a major pest in many Holarctic areas, which is spreading as an invasive species across Europe and North America. Females are able to lay eggs in ripening fruits and seem to prefer these over overripe ones, seriously affecting the production. Long-term and sustainable solutions are required to control the pest spread and damages. In several species of the genus *Drosophila* a species-specific courtship song has been described. Instead, to date, the mating behaviour of SWD was believed to focus only on visual signals. The aim of this study was to investigate the use of acoustic, in particular substrate-borne, signals by the SWD during the courtship. In laboratory, pairs of flies (one male and one female) were placed into a recording arena, a laser vibrometer recorded the substrate-borne vibrations and simultaneously the behaviour was recorded with camcorder for all the mating process. During courtship the male can produce three specie-specific signals: broadband pulses, associated with dorso-ventral abdominal oscillations, emitted in trains of variable length and irregular repetition rate (“quivering”), a brief sound with harmonic structure (“toot”), often associated to a “pulse” song, which consist of short trains of pulses with specie-specific pulse repetition time. The analysis of the videos showed a tight combination between visual and acoustic/vibrational cues to increase females acceptance. Further studies on the relevance of vibrational signals over the visual ones can enable the development of a specie-specific mating disruption approach, as it has already been done for other insect pests.