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Nontarget effects of the mosquito adulticide pyrethrin applied aerially during a West Nile virus outbreak in an urban California environment.

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Source

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Abstract

In August 2006, a pyrethrin insecticide synergized with piperonyl butoxide (EverGreen Crop Protection EC 60-6, McLaughlin Gormley King Company, Golden Valley, MN) was sprayed in ultralow volumes over the city of Davis, CA, by the Sacramento-Yolo Mosquito and Vector Control District to control mosquitoes transmitting West Nile virus. Concurrently, we evaluated the impact of the insecticide on nontarget arthropods by 1) comparing mortality of treatment and control groups of sentinel arthropods, and 2) measuring the diversity and abundance of dead arthropods found on treatment and control tarps placed on the ground. We found no effect of spraying on nontarget sentinel species including dragonflies (*Sympetrum corruptum*), spiders (*Argiope aurantia*), butterflies (*Colias eurytheme*), and honeybees (*Apis mellifera*). In contrast, significantly higher diversity and numbers of nontarget arthropods were found on ground tarps placed in sprayed versus unsprayed areas. All of the dead nontarget species were small-bodied arthropods as opposed to the large-bodied sentinels that were not affected. The mortality of sentinel mosquitoes placed at the same sites as the nontarget sentinels and ground tarps ranged from 0% to 100%. Dead mosquitoes were not found on the ground tarps. We conclude that aerial spraying with pyrethrins had no impact on the large-bodied arthropods placed in the spray zone, but did have a measurable impact on a wide range of small-bodied organisms.

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