

# Impact of Vector-borne Diseases and the Role of Mosquito Control in California

## THE MOSQUITO IS THE DEADLIEST CREATURE ON THE PLANET

- Mosquito bites result in the deaths of more than 1 million people every year worldwide.
- Mosquitoes in the United States routinely transmit at least six types of viruses, including West Nile virus (WNV), and are capable of transmitting a number of exotic diseases that have had devastating effects in other places in the world.

## WEST NILE VIRUS IS A SERIOUS THREAT

- Infected mosquitoes spread WNV – which can cause serious, life-altering consequences and death. Since 1999, more than 30,000 people in the United States have been reported as sick with WNV. There is no cure for WNV.
- According to the Centers for Disease Control and Prevention (CDC), 5,387 neuroinvasive human cases of WNV were reported nationwide in 2012. However, the CDC states that this number is only a fraction of the cases that occurred last year and estimates up to 191,300 of nonneuroinvasive disease cases in 2012. (“West Nile virus and other arboviral activity – United States, 2012”, Arboviral Diseases Branch, CDC)
- In 2012, the California Department of Public Health reported 476 human cases of WNV, 19 of which resulted in fatalities. These numbers are up significantly from 2011 when there were 158 confirmed human cases with nine fatalities.

## MOSQUITO-BORNE DISEASES COST LIVES AND MONEY

Researchers at Montana State University found that preventive mosquito control operations were cost effective in reducing vector-borne disease transmission during the 2005 Sacramento County WNV epidemic:

- Patient treatment costs can be high, including costs for inpatient and outpatient medical care, loss in productivity, miscellaneous costs such as nursing home, transportation, home health aides, and childcare costs.
- The 2005 Sacramento WNV epidemic resulted in 163 confirmed human cases and cost nearly \$3 million in medical costs and lost productivity. Emergency aerial public health pesticide applications were found to be a cost effective strategy to protect public health and reduce the economic burden on taxpayers.
- A recent study published by the CDC’s Journal of Emerging Infectious Diseases found the costs to treat 46 West Nile Neuroinvasive Disease (WNND) patients during the 2005 Sacramento County WNV epidemic exceeded the costs of emergency vector control by a factor of 3:1.

*(Based on findings from “Economic Cost Analysis of West Nile virus Outbreak, Sacramento County, California, USA, 2005” by Barber, L.M., et. al (March 2010))*

## MOSQUITO CONTROL WORKS

- In 2012, the devastating WNV outbreak in Texas brought attention to the importance of having established, efficient mosquito control programs to prevent widespread outbreaks of disease. It reinforced the importance of mosquito surveillance and control as a cost-effective use of public funds to protect public health and the environment. In many parts of California, residents have voted to form local mosquito control programs or agencies and allocate necessary funding. As a result, approximately half the land area and 85% of California’s population are within the boundaries of a mosquito control program.
- Mosquito control in California has been very successful in preventing major outbreaks of vector-borne diseases for more than 60 years. These diseases include WNV, malaria and encephalitis. Mosquito control and disease surveillance continue to protect the public against emerging vector-borne diseases such as Chikungunya, dengue fever, and yellow fever.



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