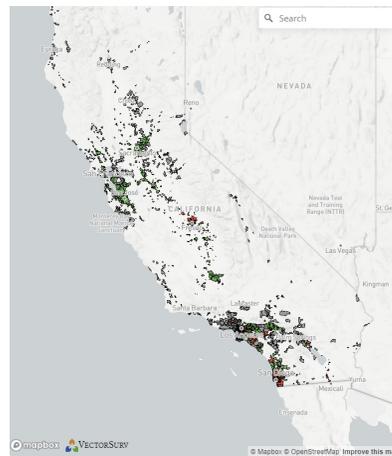




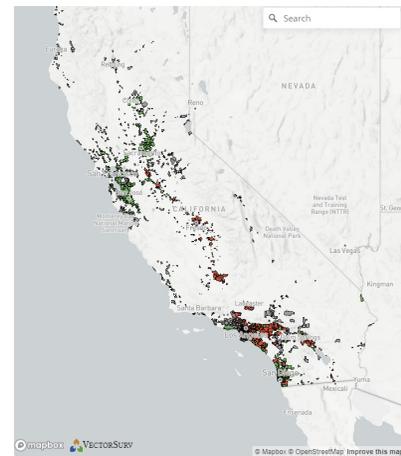
Invasive Mosquito Species in California: A Growing and Expensive Challenge

Global warming has facilitated the spread of two invasive mosquito species, *Aedes albopictus* and *Aedes aegypti*, throughout the state. Invasive *Aedes* are vectors of Zika, dengue, chikungunya, yellow fever, and dog heartworm. With over 6.5 million international travelers arriving at California ports of entry each year, the potential for local transmission of imported diseases in the state is increasing. These invasive mosquitoes are now in 16 counties in California and continue to spread. They pose a daunting challenge for mosquito and vector control districts and a serious public health threat.

CALSURV MAP SHOWING *Aedes aegypti* (IN RED) AND *Aedes* SPECIFIC SURVEILLANCE (IN GREEN)



JULY 2016



JULY 2020

NEED FOR ADDITIONAL FUNDING TO COMBAT INVASIVE AEDES

The spread of invasive *Aedes* has put an enormous strain on mosquito control districts' budgets. For example, one Southern California district's annual operational expenses increased by 34% as a result of the introduction of invasive mosquitoes. Districts across the state report:

- **Increased costs for staff:** Mosquito seasons now extend well beyond the traditional summer months and districts need year-round technicians as opposed to seasonal staff.
- **Increased costs for surveillance, pesticides and new equipment:** Invasive *Aedes* exploit small and cryptic water sources and have shown resistance to many commonly used insecticides, limiting the efficacy of traditional control approaches and increasing the need for innovative ways to treat this difficult-to-manage species.
- **Increased costs for outreach and education:** *Aedes* females bite throughout the day, resulting in numerous irritating bites, and will follow people indoors. One district had to increase public education efforts by 200% to encourage preventative practices.

- **Increased costs to fulfill additional service requests:** One district saw a 350% increase in service requests over the past 10 years with an exponential increase in 2019 when *Aedes* were detected in their region.

Federal funding that supported enhanced *Aedes* surveillance, control, and education has expired and districts need additional state support in order to prevent future disease epidemics and improve quality of life for Californians.

THE NEED FOR NEW SOLUTIONS

In order to deal with invasive *Aedes* some mosquito control districts have invested heavily in intensive outreach campaigns (media and door-to-door) to encourage the public to help eliminate mosquito breeding sources. Others are refining techniques for wide-area immature mosquito control from air and ground vehicles, which have shown some initial success but are costly and difficult to sustain. One technique that is currently being evaluated in California is a form of Sterile Insect Technique that utilizes different strains of a naturally-occurring insect bacteria called Wolbachia. When lab reared *Aedes* males are infected with a particular strain of Wolbachia and then are released to breed with wild *Aedes* female mosquitoes infected with a different strain of Wolbachia, the resulting offspring do not survive to adulthood. Initial trials in Los Angeles County and Fresno County show great promise, but there are still funding and regulatory hurdles to overcome. Implementation and sustainability of this control method will have a considerable impact on local vector control agency resources that will require partnerships between private industry and state and local government policymakers to ensure success. Unfortunately, this promising potential solution to a growing public health and economic threat is currently unattainable for most mosquito and vector control agencies due to modest annual budgets.



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