

Aedes aegypti mosquitos introduced to California multiple times

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An *Aedes aegypti* mosquito. Credit: Evlyn Pless

Aedes aegypti mosquitos can carry the pathogens that cause dengue

fever, chikungunya, Zika fever, and yellow fever, among other diseases. In 2013, scientists first reported that *A. aegypti* had been found in California. Now, researchers writing this week in *PLOS Neglected Tropical Diseases* have studied those bugs and found that the California mosquitos came from at least two distinct introductions and populations.

The infectious diseases carried by *A. aegypti* are of growing concern in tropical and sub-tropical diseases. The incidence of dengue, for instance, has increased 30-fold in the last 50 years, and both chikungunya and Zika have recently spread around the globe. *A. aegypti* is a highly successful invasive species and, today, is found in most states throughout the southern United States. In 2013, the mosquitos were found in three counties in California, and by 2016 they had expanded to at least 96 cities in 12 California counties.

In the new work, Evlyn Pless, of Yale University, USA, and colleagues genotyped 586 *A. aegypti* mosquitoes from 12 sites in California—5 in the northern part of the state and 7 in the southern region. They also genotyped *A. aegypti* from 16 other areas of the southern United States and Mexico, including multiple cities in Florida, Texas, Arizona, New Mexico, Georgia, and Louisiana.

The populations of *A. aegypti* found in Northern California, the team found, are genetically distinct from the [mosquitoes](#) found in Southern California. Moreover, the mosquitos in the northern areas are more genetically diverse, and likely arose from a separate introduction than the southern [population](#). Both populations, the researchers concluded, entered California before 2013, with the Southern California population likely coming from the Southwest US or northern Mexico, and the Northern California population coming from the South Central US.

"California has one of the most extensive mosquito-monitoring systems in the US, so the possibility that *A. aegypti* was in California years before

detection may mean mosquito invasions have occurred elsewhere in the US but escaped notice," the researchers say. "Understanding and accounting for the invasion dynamics of *A. aegypti* will continue to be essential for detecting new invasions, monitoring vector presence, and preventing [disease](#) outbreaks in California and other regions."

More information: Pless E, Gloria-Soria A, Evans BR, Kramer V, Bolling BG, Tabachnick WJ, et al. (2017) Multiple introductions of the dengue vector, *Aedes aegypti*, into California. *PLoS Negl Trop Dis* 11(8): e0005718. doi.org/10.1371/journal.pntd.0005718

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