New CDC data shows gaps remain in surveillance for mosquitoes that transmit Zika

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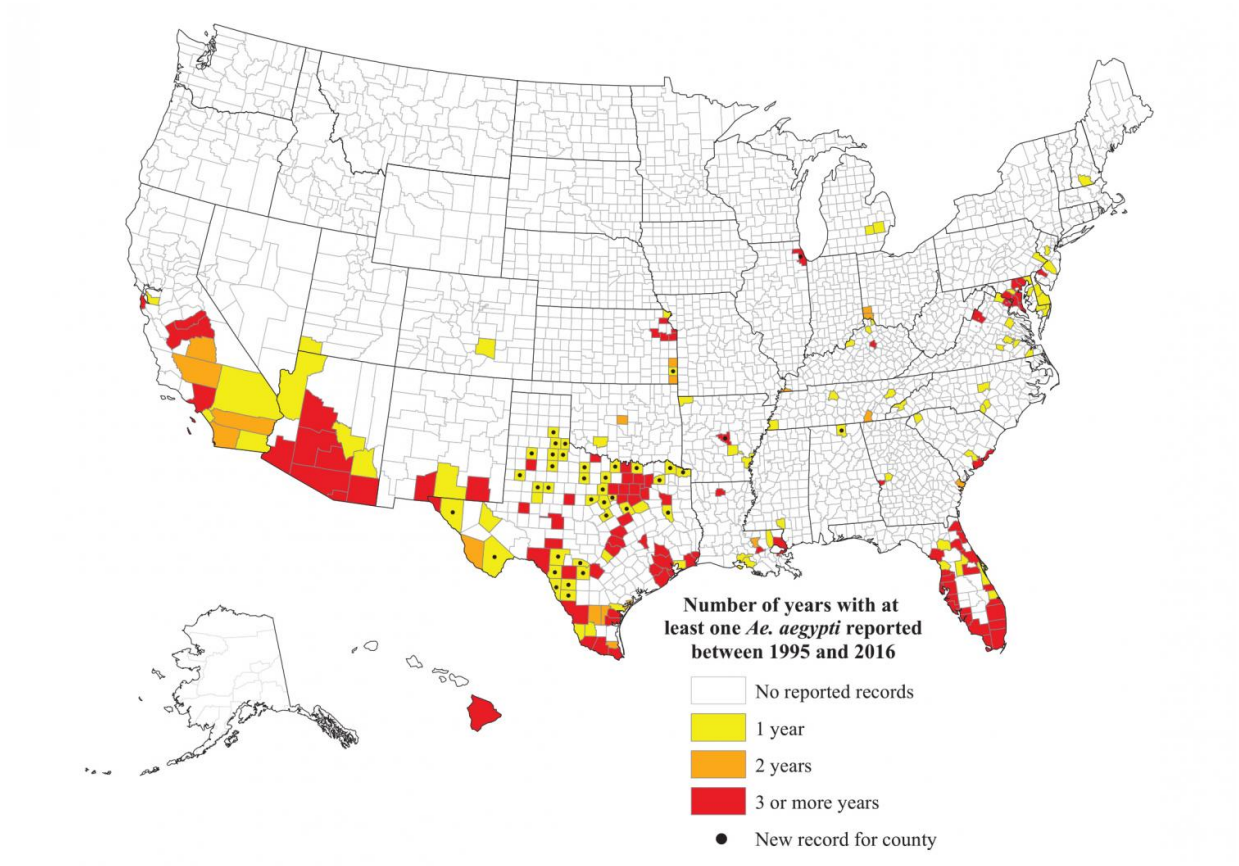


A county-level survey conducted in 2015 and 2016 by the US Centers for Disease Control and Prevention shows the historic occurrence of *Aedes aegypti* mosquitoes between January 1995 and December 2016 in the United States. Counties with black dots had new, previously unreported surveillance records in the second round of the survey in 2016, reflecting increased attention on

surveillance for mosquitoes. 'Prompted by the Zika outbreak, states began work to better assess the distribution and abundance of these mosquitoes, locally,' says Rebecca Eisen, Ph.D., research biologist with CDC's Division of Vector-Borne Diseases. (Note: The map indicates presence, not abundance, of Ae. aegypti, and the map does not indicate levels of risk for the spread of any specific disease.) Credit: Centers for Disease Control and Prevention

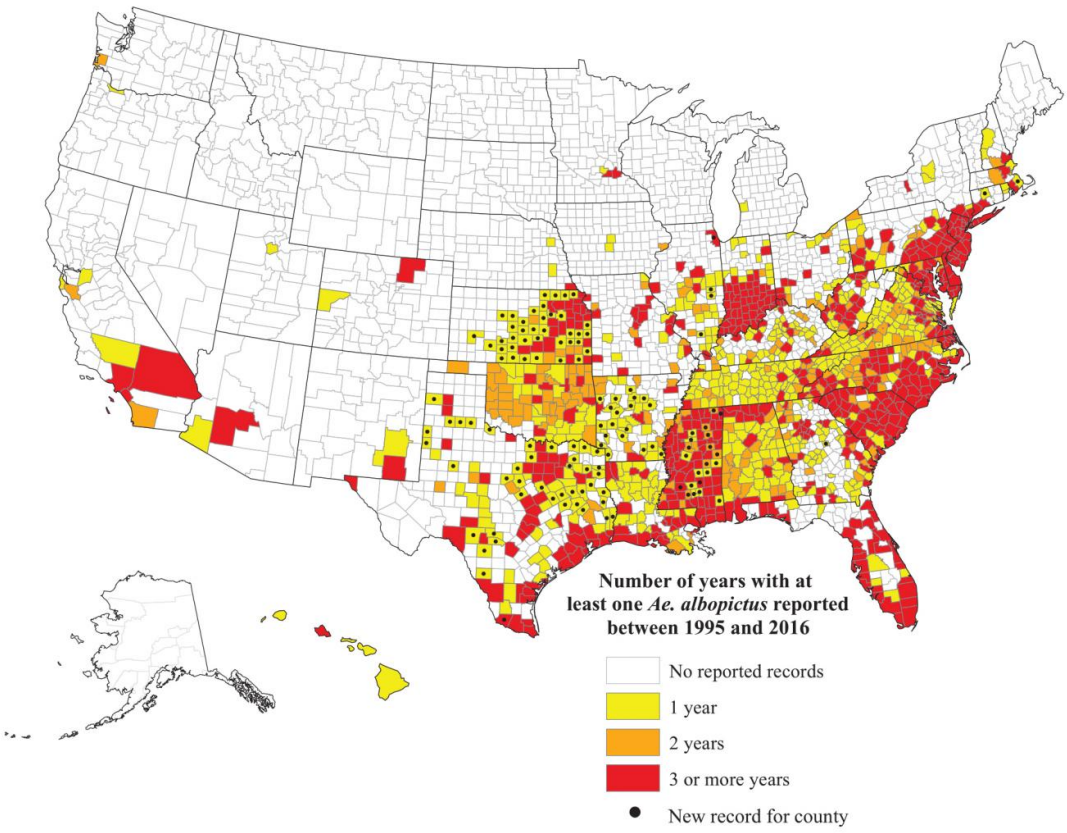
As concerns over Zika virus have grown since 2015, the U.S. Centers for Disease Control and Prevention (CDC) has turned to local public health professionals to compile data on distribution of the two primary mosquito species capable of transmitting the virus, *Aedes aegypti* (the primary vector for Zika) and *Aedes albopictus*. Their findings highlight both the potential widespread presence of the mosquitoes as well as gaps in local surveillance capabilities crucial to understanding the threat of Zika and other mosquito-borne diseases such as dengue and chikungunya. Through a county-level survey of vector-control professionals, entomologists, and state and local health departments, conducted initially in 2015 and again in 2016, CDC researchers developed what they call "our best knowledge regarding the current distribution of Ae. aegypti and Ae. albopictus in the United States." Reported in the Entomological Society of America's *Journal of Medical Entomology*, the historical county-level records compiled by the CDC show Ae. aegypti reported in 220 counties in 28 states and the District of Columbia between 1995 and 2016 and Ae. albopictus reported in 1,368 counties in 40 states and DC during that time.

In addition, the data show that in some places the percent of mosquitos found during 1995-2016 was higher, though the researchers attribute the increase not to any sudden spread of the mosquitoes but rather to the increased attention on the risks posed by Zika and other diseases, says Rebecca Eisen, Ph.D., research biologist with CDC's Division of Vector-

Borne Diseases and co-author of the study.

"The study reveals gaps in mosquito distributions—likely resulting from lack of local surveillance rather than mosquitoes being absent," she says. "Prompted by the Zika outbreak, states began work to better assess the distribution and abundance of these mosquitoes, locally. The updated survey CDC conducted in fall 2016 demonstrated that intensified surveillance in the summer of 2016 resulted in Ae. aegypti or Ae. albopictus being collected in many counties where there were no records for them in recent decades."

Eisen emphasizes that the findings illustrate the presence, not abundance, of the mosquito species, and they are not meant to represent risk for spread of Zika or any other disease. The findings also do not show how many mosquitoes are living in an area or the exact locations of the mosquitoes. But the data does allow the CDC and local stakeholders to better direct surveillance and control efforts. For instance, in counties where Ae. aegypti or Ae. albopictus have not been recorded but that neighbor areas where they have, the CDC can model the county's suitability for the mosquitoes to be present.



A county-level survey conducted in 2015 and 2016 by the US Centers for Disease Control and Prevention shows the historic occurrence of *Aedes albopictus* mosquitoes between January 1995 and December 2016 in the United States. Counties with black dots had new, previously unreported surveillance records in the second round of the survey in 2016, reflecting increased attention on surveillance for mosquitoes. 'Prompted by the Zika outbreak, states began work to better assess the distribution and abundance of these mosquitoes, locally,' says Rebecca Eisen, Ph.D., research biologist with CDC's Division of Vector-Borne Diseases. (Note: The map indicates presence, not abundance, of Ae. albopictus, and the map does not indicate levels of risk for the spread of any specific disease.) Credit: Centers for Disease Control and Prevention

"This information will help to target limited public health surveillance resources and help to improve our understanding of how widespread

these mosquitoes are," Eisen says.

For the survey, the mosquito species was considered "present" in a county in a given calendar year if at least one specimen of any life stage of the mosquito was collected, using any collection method, during that year. Ae. aegypti was reported in all southern U.S. states, with most county reports coming from southern California, Arizona, Texas, Louisiana, and Florida. Reports in neighboring Alabama, Mississippi, Georgia, and South Carolina, however, were more sporadic. Ae. aegypti is generally known to thrive in tropical and subtropical climates.

The distribution of reports of Ae. albopictus was greater and more consistent in the Southeast and Mid-Atlantic states and even southern New England. It was also recorded in a few counties in the Southwest, including California, Arizona, and New Mexico.

More information: "Updated Reported Distribution of Aedes (Stegomyia) aegypti and Aedes (Stegomyia) albopictus (Diptera: Culicidae) in the United States, 1995-2016," *Journal of Medical Entomology*, DOI: 10.1093/jme/tjx088

Provided by Entomological Society of America