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E360 DIGEST

MARCH 5, 2019

Climate Change Will Expose Half of World's Population to Disease-Spreading Mosquitoes By 2050

The yellowfever mosquito*Aedes aegypti*.PHIL/CDC PHIL, CDC

Scientists and public health officials have documented an increasing number of outbreaks of mosquito-borne illnesses across the globe in recent years, including yellow fever, dengue, chikungunya, and Zika. Now, an international team of researchershas foundthat by 2050, two key disease-spreading mosquitoes —Aedes aegyptiandAedes albopictus— will significantly expand their range, posing a threat to 49

percent of the world's population.

"If no action is taken to reduce the current rate at which the climate is warming, pockets of habitat will open up across many urban areas with vast amounts of individuals susceptible to infection,"said Moritz Kraemer, an infectious disease scientist at Boston Children's Hospital and the University of Oxford and a co-author of the new research, published in the journalNature Microbiology,.

The researchers analyzed historical distribution data from more than 3,000 locations in Europe and the United States, dating back to the 1970s. They then modelled future distribution using projections for climate change, urbanization, and human migration and travel. Kraemer and his colleagues found that in the last five years,Aedes aegyptihas spread northward in the U.S. at about 150 miles per year. In Europe,Aedes albopictushas spread at a rate of 93 miles per year.

The scientists also found that within the next 5 to 15 years, human travel and migration will be the largest factors driving the spread of mosquitoes. After that, however, climate change and accelerating urbanization will create new mosquito habitats.Aedes aegypticould reach as far north as Chicago and Shanghai by 2050. However, the species will likely decline in parts of the southern U.S. and Eastern Europe, which are expected to become more arid as global temperatures rise.Aedes albopictus, on the other hand, is forecast to spread widely throughout Europe over the next 30 years, as well as establish small populations in parts of the northern U.S. and the highland regions of South America and East Africa.