

Mosquito-borne diseases on the uptick -- thanks to global warming

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Dear EarthTalk: Is there a link between the recent spread of mosquito-borne diseases around the world and environmental pollution?
-- Meg Ross, Lantana, FL

If by pollution you mean greenhouse gas emissions, then definitely yes. According to Maria Diuk-Wasser at the Yale School of Public Health, the onset of human-induced global warming is likely to increase the infection rates of mosquito-borne diseases like malaria, dengue fever and West Nile virus by creating more mosquito-friendly habitats.

"The direct effects of temperature increase are an increase in immature mosquito development, virus development and mosquito biting rates, which increase contact rates (biting) with humans," she reports.

To wit, the U.S. Centers for Disease Control and Prevention (CDC) reported a record number of West Nile virus infections in the continental U.S. in 2012 with some 5,674 documented cases including 286 deaths. The virus uses insects as hosts where they reproduce and then are transmitted to humans via mosquito bites; it can also be transmitted via blood transfusions, organ transplants and breast feeding.

While it's still far less common, U.S. cases of mosquito-borne dengue fever—also known as "breakbone fever" for the feeling it gives its victims—rose by 70 percent in 2012 as compared with 2011. The CDC reports 357 cases of dengue fever in the continental U.S. in 2012, up from 251 in 2011. The majority, 104, was in Florida, but New York had 64 and California 35. Most of the infections were imported on people travelling to the U.S.—Puerto Rico played host to 4,450 dengue fever cases in 2012, up from only 1,507 in 2011. But some of the cases in Florida likely came from mosquito bites there. The virus behind dengue fever thrives in tropical and sub-tropical environments. The increased warming predicted for the southern U.S. along with increased flooding means dengue fever will no doubt be spreading north on the backs of mosquitoes into U.S. states that never thought they would have to deal with such exotic outbreaks.

West Nile and dengue fever aren't the only mosquito-borne diseases on U.S. public health

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officials' radar. Chikungunya, which hitches a ride on the ever expanding Asian tiger mosquito and can cause high fever, fatigue, headache, nausea, muscle and joint pain, and a nasty rash in humans, comes from tropical Africa and Asia. But cases have started appearing in Western Europe in recent years and are expected to make it to the U.S. East Coast at anytime. Likewise, Rift Valley fever, which brings with it fever, muscle pain, dizziness, vision loss and even encephalitis, was limited to Kenya only a decade ago but today has spread across the entire African continent and is expected to make an appearance in Europe and the U.S. soon.

While researchers are hard at work to find vaccines against these diseases, concerned Americans can take some basic precautions to minimize their chances of getting mosquito bites. Keep screens on all the windows and doors in the house that can open. Outside, wear long pants and long sleeved shirts when possible and cover up with an insect repellent—the U.S. Environmental Protection Agency (EPA) says only those formulations containing the chemical DEET have been proven effective but there are plenty of all natural alternatives out there. In the meantime, our best defense against these diseases may be keeping our carbon footprints down, as the less global warming we cause, the less we'll have to deal with an onslaught of tropical mosquito-borne diseases.

CONTACTS: Maria Ana Diuk-Wasser PhD, publichealth.yale.edu/people/maria_diuk-3.profile;
CDC Mosquito-Borne Diseases, www.cdc.gov/ncidod/diseases/list_mosquitoborne.htm

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