

Size, sounds and sex: making male mosquitoes more attractive to fight disease

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Video Abstract

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Abstract

In the battle against mosquito-born disease, scientists are turning to one of the world's oldest practices for help: matchmaking. Releasing sterile or genetically altered male mosquitoes into the wild to mate with females prevents those mosquitoes from reproducing and going on to spread disease. But understanding more about what females find attractive could help create males they'll mate with. So what do female mosquitoes look for in a mate? Researchers from the United Kingdom recently revealed that being a good listener matters...at least to *Aedes aegypti* mosquitoes, a species responsible for transmitting diseases such as yellow fever, dengue, and Zika. Many mosquito species mate in midair. As they fly, their beating wings produce unique sound patterns, and a male must match a female's sound pattern to gain her romantic interest. This is called harmonic convergence. Various factors influence how well the insects can match these mating tunes, but the researchers decided to focus on body size. They fed mosquitoes varying amounts of food to make small and large insects of both sexes. Then, they paired off the insects in different combinations and measured how often the couples matched sound patterns as they came together to mate. It turned out that the positive effects of convergence on coupling were most pronounced when large males mated with large females – size didn't matter to small females: they were interested in any male that converged. That's important because large females produce many more offspring than small females, so size-matching could offer a new way to quickly cut down mosquito populations. By knowing that convergence matters to female mosquitoes, scientists can release males that are better listeners into the wild. It's a simple way to increase male competitiveness and boost the effectiveness of mosquito control efforts, thereby preventing the transmission of deadly and debilitating diseases.