

Trapping the Zika virus

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The Zika virus spreading through South and Central America was previously considered a mild pathogen, but a possible link to birth defects has elevated the obscure mosquito-borne disease to a public health emergency. Though Zika and Ebola are very different in transmission and symptoms, the same lessons learned from the West African outbreak can be applied in the Americas. As they did for Ebola, the New England Complex Systems Institute (NECSI) has outlined a response plan based at the community level. In addition to limiting exposure to mosquitoes and advising travelers, NECSI's plan takes control efforts one step further: offering female mosquitoes a place to lay their eggs, but with a deadly surprise.

Most mosquito control plans rely on draining mosquito breeding sites to reduce their reproduction. The mosquito spreading Zika (as well as Dengue and other viruses of concern) prefers water in man-made vessels in and around homes. These sources of water may be as small as a bottle cap, so it is difficult to find all of them. NECSI's plan seeks to counteract this problem by suggesting that households deliberately set out containers of water for female [mosquitoes](#) to lay their eggs in. But these containers are actually traps. The mosquitoes lay their eggs, and then the eggs are killed before they can hatch and develop. Simple but effective ovitraps can be made from easily obtained materials and deployed by every household. The more traps there are in competition with hidden breeding sites, the lower the chances of successful mosquito reproduction.

In combination with traps, NECSI seconds the suggestions of [public](#)

[health](#) organizations to reduce exposure to mosquitoes in affected region through the use of protective clothing, insect repellent, and mosquito screens where possible. To facilitate the low availability of screens in many of the affected regions, NECSI suggests public buildings and businesses with screen doors and windows or air conditioning offer shelter to the community during times of peak mosquito activity. These siestas, which should take place at alternating times of day, serve the dual purpose of reducing virus transmission and starving [female mosquitoes](#) of the blood meal they need to reproduce. Travelers should also be advised about reducing the disease's geographic spread.

Past studies of ovitrap effectiveness, including by the U.S. military, have shown remarkable levels of success in reducing mosquito populations when used in sufficient numbers. In combination with other response efforts to reduce mosquito exposure, especially for pregnant women, each household maintaining a handful of ovitraps can quickly cause fast-breeding mosquito populations to crash below sustainable levels. Concern over Zika can motivate poor communities in affected countries, which are often difficult to reach by public health programs, to actively suppress mosquito populations. This is important not just for stopping this epidemic, but countless other [mosquito-borne diseases](#).

More information: The draft community response plan can be accessed at [necsi.edu/research/social/pand ... cs/zikaresponse.html](https://necsi.edu/research/social/pand...cs/zikaresponse.html)

Provided by New England Complex Systems Institute

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