

Scientists have nearly eradicated dengue fever cases in North Queensland

October 5 2023



Credit: Unsplash/CC0 Public Domain

Scientists say the release of mosquitoes containing the Wolbachia bacteria has practically eliminated dengue fever cases in North Queensland.

Dr. Samson Ogunlade is a mathematician with James Cook University's Australian Institute of Tropical Health and Medicine. He said from October 2014 to February 2019, [local authorities](#) in Townsville released Wolbachia-infected *Aedes aegypti* mosquitos—the type of mosquitoes which are responsible for spreading dengue—around the city.

"The hope was that they would spread the Wolbachia bacteria to other mosquitoes. Wolbachia changes mosquitoes so they are less able to transmit viruses like dengue, zika, chikungunya and [yellow fever](#). This makes it harder for viruses to reproduce. Wolbachia also reduces the reproductive capabilities of the mosquito itself," said Dr. Ogunlade.

He said the new study developed a mathematical modeling framework to estimate the effectiveness of this intervention as well as the relative dengue transmission rates of Wolbachia-infected and wild-type mosquitoes. The work is published in the journal *Scientific Reports*.

"We found the likelihood of a human becoming infected with dengue, if bitten by a Wolbachia-infected mosquito, is about 5% of the risk if you are bitten by a mosquito from the wild-type population.

"In addition, the Townsville Wolbachia release program led to a 65% reduction in predicted dengue incidence during the release period and over 95% reduction in the 24 months that followed," said Dr. Ogunlade.

He said similar success had previously been reported in Cairns.

"JCU was a big part of this, with the public health entomology team, led by Professor Scott Ritchie, pivotal in the successful program," said Dr. Ogunlade.

He said the success was achieved despite a resurgence of dengue cases from 2015 to 2019 throughout the South-East Asia region—which is the

source location of most international importations of [dengue](#) into
Townsville.

More information: Samson T. Ogunlade et al, Quantifying the impact
of Wolbachia releases on dengue infection in Townsville, Australia,
Scientific Reports (2023). [DOI: 10.1038/s41598-023-42336-2](https://doi.org/10.1038/s41598-023-42336-2)

Provided by James Cook University

Citation: Scientists have nearly eradicated dengue fever cases in North Queensland (2023,
October 5) retrieved 28 April 2024 from [https://medicalxpress.com/news/2023-10-scientists-
eradicated-dengue-fever-cases.html](https://medicalxpress.com/news/2023-10-scientists-eradicated-dengue-fever-cases.html)

This document is subject to copyright. Apart from any fair dealing for the purpose of private
study or research, no part may be reproduced without the written permission. The content is
provided for information purposes only.