

Study of decline of malaria in the US could affect approach to malaria epidemic abroad, researcher says

October 22 2013



Sledge's research showed that targeted public health interventions led to the decline of mosquito-borne malaria in the 1930s.

(Medical Xpress)—A new UT Arlington study about the elimination of malaria in the 1930s American South may have significant implications for solving modern day malaria outbreaks in parts of Africa, Central and Latin America and Asia.

Researchers challenged a leading argument that movement of Southern tenant farmers away from mosquito breeding grounds was the dominant factor in the decline of [malaria](#) in U.S. during the 1930s.

Instead, targeted [public health](#) interventions and the development of local-level public health infrastructure helped eradicate the disease,

according to Daniel Sledge, assistant professor of political science at UT Arlington and lead author of "Eliminating Malaria in the American South: An Analysis of the Decline of Malaria in 1930s Alabama," a paper recently published by the *American Journal of Public Health*.

"We found that targeted [public health interventions](#), supported by the federally backed development of state and local public health infrastructure, led to the decline of malaria despite widespread and deep-seated poverty," Sledge said.

Beth Wright, dean of the College of Liberal Arts at UT Arlington, said Sledge's research benefits the public, health professionals and policy makers globally.

"Dr. Sledge's work has far-reaching implications for those who work to eradicate malaria and similar diseases," Wright said. "Huge challenges remain, but such research brings about better understanding of potential solutions and could ultimately help save lives."

Malaria is an infectious disease caused by a parasite called plasmodium and transmitted through the bites of infected mosquitoes. The disease causes fever, headache and vomiting. Untreated, it can become life threatening.

Malaria killed an estimated 1.24 million people worldwide in 2010 and has decimated economies in the heavily populated, warm climate regions of the Global South, according to recent studies.

Malaria played a similarly devastating role in the American South until the 1930s, researchers detailed, by lowering the productivity of workers, deterring migration into the region and severely limiting economic growth.

Historian Margaret Humphreys argued in her landmark 2001 book, "Malaria: Race, Poverty, and Public Health in the United States," that it was the removal of the malaria carrier and victim from the vicinity of the anopheles mosquito that likely had the largest effect on the decline of the disease.

But Sledge and co-author George Mohler, assistant professor of mathematics and computer science at Santa Clara University in California, found otherwise.

"We assessed this argument using Census data on the number of farms operated by tenants during the 1930s. We found that highly malarial areas actually gained population during the period that malaria declined," Sledge said. "Changes in the type of farms, meanwhile, didn't lead to a decline in malaria."

He added: "Put another way, population movement didn't lead to the end of malaria in the United States – public health work did."

During the 1930s, the federal Works Progress Administration put unemployed Southerners to work draining millions of acres of wetlands. Along with the federally sponsored creation of local health departments, these drainage projects led to the decline of malaria, the authors said.

The federal government further ramped up its efforts during World War II, creating the agency that became the Centers for Disease Control and Prevention specifically to fight southern malaria. After the war, the CDC used the insecticide DDT to eradicate the few remaining pockets of the disease.

For their study, Sledge and Mohler used a mathematical model to analyze the decline of malaria in each of the 67 counties in Alabama, an archetypical Deep South cotton state that experienced high levels of

malaria incidence well into the 1930s.

"In the model, we categorized counties into three risk levels and then estimated the dependence of mortality rates on variables related to weather, WPA projects and population movement," Mohler said. "After drought, the most important variable for predicting a decline in mortality rates was the amount of drainage in a county, rather than movement out of high risk counties or a reduction in tenant farms."

In addition to drainage work, researchers point to the importance of measures such as screening and [public health infrastructure](#) as well as the training of public health workers in the elimination of the disease.

While the team concedes that there are considerable distinctions between the current Global South and the American South of the 1930s, they argue that malaria can be controlled in the face of poverty and economic dislocation without major social change.

"Today, [disease](#) surveillance, drainage measures and screening work to ensure that, on those occasions when malaria is reintroduced from outside of the U.S., the chain of transmission does not begin again," Sledge said.

More information: [ajph.aphapublications.org/doi/ ... 105/AJPH.2012.301065](https://ajph.aphapublications.org/doi/10.1093/ajph.2012.301065)

Provided by University of Texas at Arlington

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