Researchers urge use of global dashboard in light of recent malaria cases

June 30 2023, by Cassidy Delamarter

This mosquito was documented in 2022 by citizen scientists in Texas; it was the first iNaturalist observations in the U.S. of mosquito Aedes scapularis, an invasive species that causes yellow fever. Credit: Lawrence Reeves

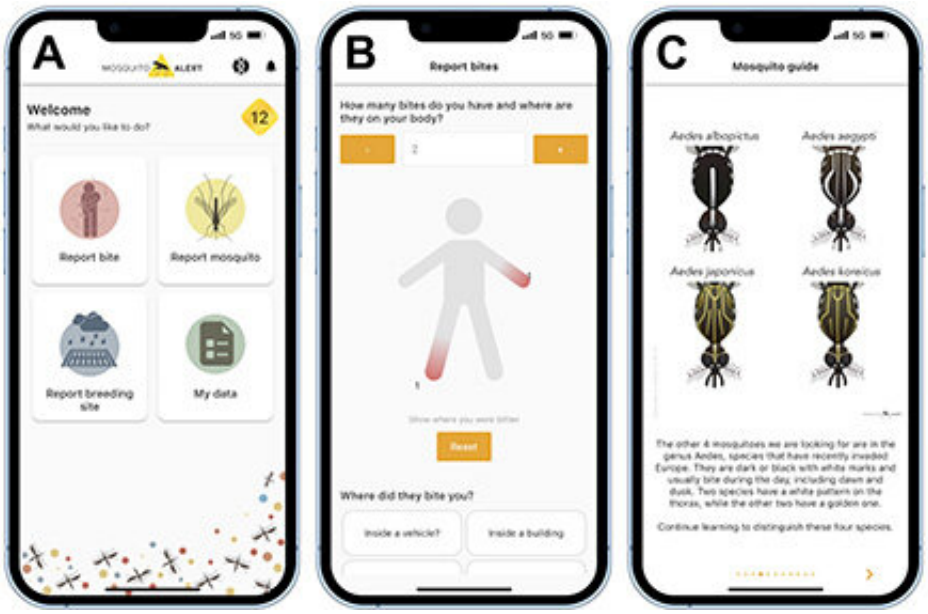
Researchers at the University of South Florida are urging the public to

take photos of mosquitoes and share them to help track and mitigate the potential spread of malaria. The Florida Department of Health has issued a statewide mosquito-borne illness advisory after four confirmed cases of malaria in Sarasota County. An additional case has also been reported in Texas.

Ryan Carney, assistant professor of integrative biology, and Sriram Chellappan, professor of computer science and engineering, developed mosquitodashboard.org, which utilizes data provided by ordinary citizens and artificial intelligence to identify the location and species of disease-carrying mosquitoes.

The public dashboard serves as an aggregation of data from multiple smartphone apps, including NASA's GLOBE Observer, iNaturalist and Mosquito Alert, where people are encouraged to be "citizen scientists" and upload photos of any mosquitoes that they find. The data from each app is displayed on the dashboard, which features an interactive map that allows users to analyze mosquitoes near them and around the world.

"It would be phenomenal for citizen scientists in Sarasota County and beyond to download and use our partner apps," Carney said. "Citizen scientists with smartphones can serve as extra sets of eyes to help monitor these malaria mosquitoes, in locations and at a scale otherwise impossible via traditional mosquito trapping methods. Importantly, by contributing valuable data on exactly where these malaria mosquitoes are found in their community, everyday citizens can help guide local mosquito surveillance and control programs."



Mosquito Alert. Credit: University of South Florida

By leveraging the photos uploaded, the team has gathered more than a half million images, allowing their artificial intelligence algorithm to better identify mosquitoes in the adult and larval stage—a critical element to mitigating mosquito-borne diseases. By identifying the species of mosquito, the team can determine its potential for carrying diseases and alert local authorities.

"Advances in artificial intelligence algorithms yield novel technologies for accurate, fast and large-scale surveillance of malaria-spreading mosquitoes," Chellappan said. "The impact of these technologies is significantly amplified when fueled by data from the general public, the consequence of which greatly strengthens our fight against malaria."

These technologies have proven successful locally and globally. In Tampa Bay, the team recently examined the abundance and ecological drivers of Aedes aegypti, a mosquito that carries dengue, yellow fever

and Zika. They hope their study, published in the *Journal of the American Mosquito Control Association*, will serve as a framework for leveraging mosquito abundance data to inform habitat models and local control efforts. With that, the team will further examine the abundance of mosquitoes capable of transmitting malaria in Florida and Texas.

"Ultimately, the strategy is to further deploy our arsenal of next-generation digital technologies to enable more accurate and precise surveillance and control of mosquitoes carrying deadly diseases in Florida and beyond," Carney said.

More information: Johnny A. Uelmen et al, A Habitat Model for Disease Vector Aedes aegypti in the Tampa Bay Area, Florida, *Journal of the American Mosquito Control Association* (2023). DOI: 10.2987/22-7109

Provided by University of South Florida