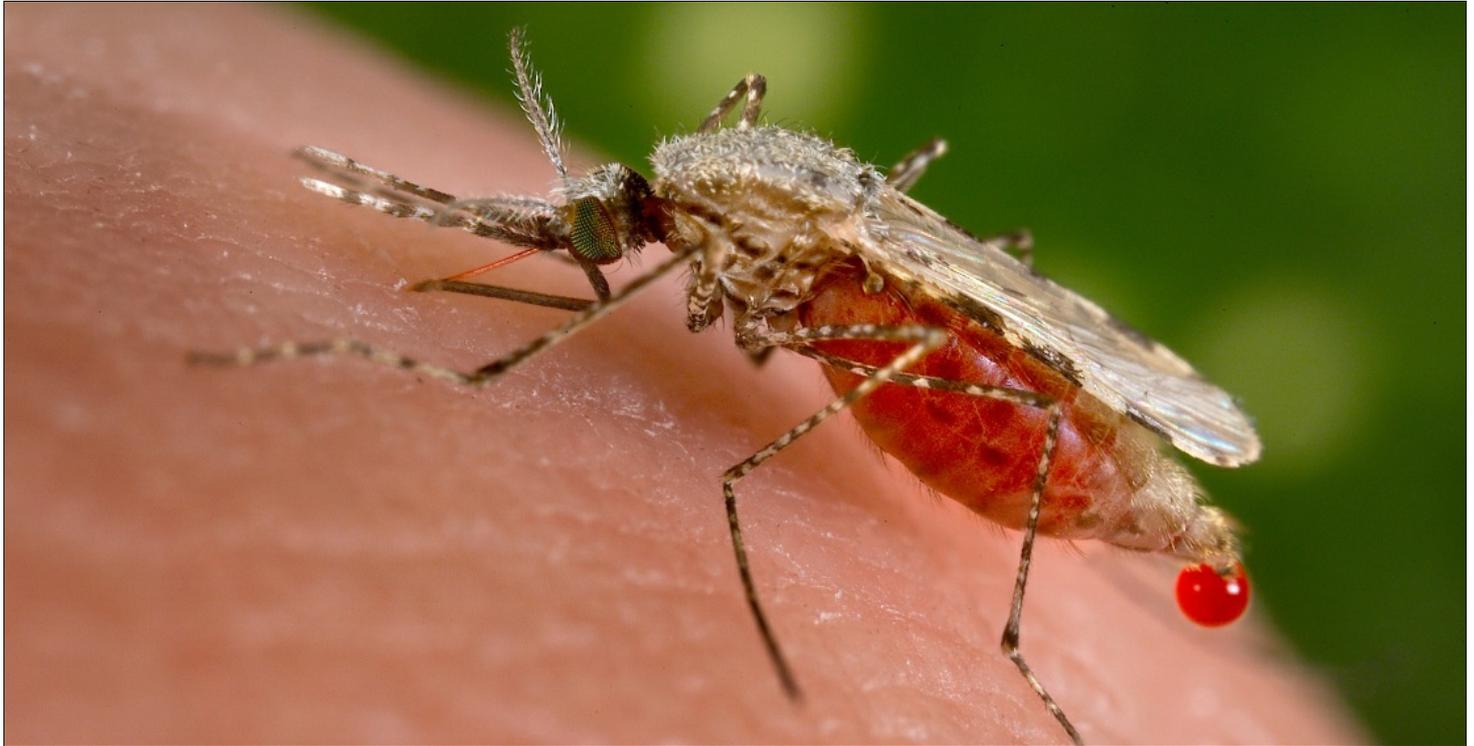


Invasive malaria mosquito finds way to cities in the Horn of Africa

Sunday 25 April is World Malaria Day. The malaria mosquito *Anopheles stephensi*, originally found in South Asian cities, is making its way to cities in the Horn of Africa.

22-04-21



Dit is de omschrijving

Mosquitos and the infections they carry are travelling along trade routes and settling in ever-expanding cities. For example, the malaria mosquito *Anopheles stephensi*, originally found in South Asian cities, has now found its way to cities in the Horn of Africa. The Institute of Tropical Medicine (ITM) in Antwerp is part of an interdisciplinary research project that aims to map the social and environmental factors impacting the spread of *Anopheles stephensi* malaria in Ethiopia and Sudan. The project *Controlling Emergent Anopheles stephensi in Ethiopia and Sudan (CEASE)* is led by the Liverpool School of Tropical Medicine (LSTM) and funded by the Wellcome Trust.

Anopheles stephensi is an invasive malaria mosquito found mainly in urban areas in the Middle East and South Asia. Between 2000 and 2010, the mosquito hitchhiked its way to the Arabian Peninsula via freight traffic and eventually reached the Horn of Africa. For Africa, this new source of infection was identified after an unusual outbreak in Djibouti City. Meanwhile, if the vector adapts well to the urban environment in these new settings, local populations could be at high risk. The Vector Biology Department at LSTM leads an interdisciplinary team of biologists, epidemiologists, mathematicians, geostatistical modelers and social scientists. Divided into entomological, epidemiological, mathematical and geostatistical modelling and social sciences work packages, the researchers in the CEASE project aim to map the spread and the route of the mosquito.

126 million more people at risk

The social science work package, led by the ITM's Unit of Socio-Ecological Health Research, aims to understand how social and ecological factors affect the spread of the mosquito in this region. As malaria in Africa has primarily been a rural disease, local malaria mosquito species are not well adapted to urban environments, *Anopheles stephensi* is invading the African urban environment, where an estimated 126 million additional people are potentially at risk of malaria. "It is vital that multi-sectoral vector control strategies are designed and tested, tailored to the new urban context", explains Fatou Jaiteh, researcher at ITM.

Interaction of ecological, social and architectural factors

Cities are dynamic environments, both socially and architecturally. It is the population that shapes and determines the space. By innovatively dealing with the interaction between ecological, social and even architectural factors, diseases such as malaria can be combated. "That is why we are conducting fieldwork with local researchers: to discover what the mosquito's breeding grounds are and where infections happen. We involve all stakeholders from the health and non-health sector: population, agricultural, health and transport sectors etc.," says researcher Fatou Jaiteh.

In later stages of the study, researchers will determine the effectiveness of existing and of new control strategies and model the public health impact and cost-effectiveness of different emerging vector control strategies.

"If this invasive malaria species becomes established without swift action, it will have huge implications for morbidity and mortality in the Horn of Africa. This complex problem requires a complex socio-ecological approach. By bringing together stakeholders from different corners of society, we will get a better picture of how we can work together towards solutions that involve all parties," says Prof. Koen Peeters of ITM and principal investigator of this

social science study.

“Africa has the highest rate of increase in urbanization of any continent and the UN estimates that 58% of the population will live in urban areas by 2050. An urban-adapted malaria mosquito could wreak havoc across the continent if allow to spread,” warns Dr Anne Wilson, co-director of the CEASE project.

The malaria mosquito, the deadliest animal on earth

Malaria is the most notorious tropical disease that still kills more than half a million people every year. This makes the mosquito that transmits the parasitic disease the deadliest animal on earth. By acting on the biological, human and social chains, ITM contributes to the control of malaria. The Institute has a new insectarium that houses a wide range of insects, from tiger and malaria mosquitoes to sand flies. The research space provides extensive opportunities for interdisciplinary work. This allows for even better study of tropical diseases, and the vectors that transmit them.