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Press Release

Scientists share the results from the first ever release of non gene drive genetically modified mosquitoes in Africa

Bobo-Dioulasso, Burkina Faso, 10 February 2022 - The [Target Malaria](#) team led by scientists at the Institut de Recherche en Sciences de la Santé (IRSS) in Bobo-Dioulasso, Burkina Faso present the entomological results of the first ever small-scale release in Africa of genetically modified mosquitoes in 2019 in a new paper published today in Nature Communications: "[Mark-release-recapture experiment in Burkina Faso demonstrates reduced fitness and dispersal of genetically-modified sterile malaria mosquitoes](#)".

In Bana, Western Burkina Faso, scientists monitored for several months the movements and survival of 14,850 [non gene drive genetically modified sterile male](#) and non transgenic sibling mosquitoes that were released on July 1, 2019.



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"The objective of the study was to demonstrate the ability to estimate the daily survival rate of the non gene drive sterile male strain of mosquitoes, to assess their ability to participate in swarming activities – which is critical for reproduction, to evaluate their dispersal in the release area, and to estimate the size of the target population at the time of release", says [Dr Franck A. Yao, Field Entomology Coordinator](#) for [Target Malaria Burkina Faso](#).

Over the studies' seven-month period, the researchers at IRSS monitored the mosquitoes' behaviour and flight zone. The first major finding is that the released mosquitoes participated in swarming activities in the field in the same manner as their wild counterparts. As predicted from laboratory and modelling studies, after recapturing them, the researchers found that the genetically modified mosquitoes were less mobile than their non-transgenic siblings and had lower survival rates. The transgene disappeared from the study population at the end of the released sterile males' lifecycle.

The study gives scientists unique information about the fitness and behaviour of this non gene drive genetically modified strain of *Anopheles coluzzii* mosquitoes in a natural environment. Until the 2019 release in Burkina Faso, these non gene drive sterile male mosquitoes had only been studied in contained laboratory settings in Europe and Africa.

This particular genetic modification results in the sterility of male mosquitoes. They are able to mate with female mosquitoes, but they do not produce any viable offspring. This modification does not carry the gene drive technology.

The research team are working with *Anopheles coluzzii* because it is one of the main malaria vectors out of the 40 mosquito species that can transmit malaria to humans. It is the prominent malaria vector in Burkina Faso. In 2020, both malaria cases and deaths increased worldwide, with 241 million malaria cases and 627,000 deaths, 95% of cases and 96% of deaths occurring in Africa ([World Malaria Report 2021](#)).

Progress to eliminate malaria in Africa has slowed down. Burkina Faso is one of the countries most affected by malaria globally with all 21 million inhabitants at risk, over 12 million cases and close to 30,000 deaths per year ([World Malaria Report 2021](#)).

Over the past years, it has become clear that the current tools to control malaria will need to be complemented by new tools, such as genetic technologies. As noted by the [WHO statement](#) issued in October 2020: "Recognizing the urgent need for new tools to combat vector-borne diseases, and in the spirit of fostering innovation, WHO supports the investigation of all potentially beneficial technologies, including genetically modified mosquitoes".

The IRSS scientists, who led the release, are part of the international not-for-profit consortium, [Target Malaria](#), whose goal is to use genetic technologies to reduce the population of malaria-transmitting mosquitoes in sub-Saharan Africa.

"Although this small-scale release was not intended to be used as a malaria control tool, it was a stepping stone for the team to [gather information, build knowledge and develop local skills](#). The scientific data we obtained will be essential in the successful development of our next phases", stated Professor Abdoulaye Diabaté, Principal Investigator of Target Malaria Burkina Faso.

The study enabled the team to work closely with affected communities and regulatory authorities and engage in a continuous dialogue with these stakeholders on genetic approaches to malaria control.

"Target Malaria's release is a crucial step towards the development of novel tools harnessing the power of precise genetic editing towards future malaria elimination. The data collected as part of this study will help develop novel strains with better survival and increased effectiveness. It is an important new chapter in the fight against malaria", noted Professor Frédéric Tripet, Principal Investigator for Entomology for Target Malaria, Keele University.

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About Target Malaria

Target Malaria is a not-for-profit research consortium that aims to develop and share new, cost-effective and sustainable genetic technologies to modify mosquitoes and reduce malaria transmission. Our vision is to contribute to a world free of malaria. We aim to achieve excellence in all areas of our work, creating a path for responsible research and development of genetic technologies, such as gene drive. www.targetmalaria.org

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