

Mosquitoes Make Sweet Love Music

{mosmodule phpinc=embeddedvideo.php}The annoying fee fee in yuh ears dem say is love songs, next di sting dem will be kisses. Sexy songs sung by mosquitoes in courtship could be key to curbing the spread of dengue fever, say scientists. {mosmodule phpinc=toc.php}During mating, the male and female beat their wings together in harmony

Amorous mosquitoes "sing" a mating duet by beating their wings together in harmony, US scientists have discovered.

They eavesdropped on a male *Aedes aegypti* mosquito pursuing a female in mating flight, and recorded the couple's courtship "love song". The insects spread diseases like yellow fever and dengue, so scientists are seeking ways to control their numbers.

Understanding their mating habits could open up new avenues, says a team from Cornell University, writing in *Science*.

The familiar buzz of a flying female mosquito may be irritating to humans, but for her male counterpart, it is an irresistible mating signal.

Males and females each have their own characteristic flight tone - which they create by beating their wings.

But when scientists from Cornell University listened in on a male *Aedes aegypti* pursuing his mate, they were surprised to hear a new kind of "music" playing.

{mosmodule phpinc=hottopics.php}Fever pitch

The amorous couple began to beat their wings together at a matching frequency - 1,200 hertz.

This love song is a "harmonic", or multiple, of their individual frequencies - 400 Hz for the female and 600 Hz for the male.

What's more, the high pitch hum exceeds the previously known upper limit for hearing in mosquitoes.

It was thought that females may even be deaf. But the Cornell scientists were able to show that their hearing range extends to 2,000 Hz.

These discoveries may inspire new ideas for interfering with the mating process of both *Aedes aegypti* and *Anopheles gambiae*, which carries malaria.

"This opens up a whole new world for mosquito control," says Laura Harrington, associate professor of medical entomology, at Cornell University, a co-author on the paper.

"For decades we have lacked new tools for the control of mosquito vectors.

"Malaria cases are at an all time high and emerging infections, such as dengue hemorrhagic fever, are increasing at an alarming rate.

"New strategies will only come with a clear understanding of mosquito behaviour - a topic that has been neglected by scientists."

Traditionally, mosquitoes which carry malaria and dengue are kept in check by spraying insecticides, with limited success.

Firing blanks

A drive is now on to develop more sophisticated control strategies - which may involve "breeding out" the mosquitoes.

By creating sterile males, and releasing them into the wild, females can be tricked into mating with a partner who will bear them no offspring.

If enough of these sterile insects are released over a long enough period, then in theory, the target population would decline.

Another strategy is to release mosquitoes which have been genetically engineered so that they cannot transmit dengue virus.

"The big obstacle," says Professor Harrington, "is that females can tell if a male has been altered.

"Oh, they know. Believe me, they know.

"We see the female kicking out at the altered male, and after a while, he loses interest.

"So we're trying to discover what makes a male more attractive. It's a mystery. It could be his odour, or his bright black and white markings.

"But we think females are assessing the fitness of males based on how well they can sing."

Simply irresistible

She hopes in future to breed transgenic males that are "better singers".

These mellifluous males would be nigh-on-irresistible to females, who would mate with them "even though it's not in their best interests".

The partnership would yield offspring which are either inviable, or unable to transmit dengue virus.

"If we can interrupt mating and reproduction, we have a very strong tool for mosquito control," says Professor Harrington.

"If you eliminate the vector, you eliminate the disease. It seems simple but we really haven't had anything since DDT that's been useful in controlling the mosquito."

But these new genetic strategies will still present many major obstacles - not least, the massive scale of rearing required.

An alternative plan, could be to use "acoustic interference" - playing audio frequencies which confuse the mosquitoes, or discourage them from mating.

"This opens up a whole new area for us to explore," says Professor Harrington.

"Very little is known about mosquito mating behaviour - especially in males - it has largely been ignored.

"Perhaps that's because it happens so quickly.

"It's all over in about 10 seconds." Listen to them: <http://news.bbc.co.uk/1/hi/sci/tech/7814539.stm>

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