

Cutting down forests may be helping spread malaria to humans

By Washington Post, adapted by Newsela staff on 01.06.16

Word Count **852**



A worker marks timber logs at a concession area in the Miri interior of the eastern Malaysian Borneo state of Sarawak, Dec. 11, 2007. Deforestation in Malaysian Borneo is believed to be a driver of malaria transmission in humans, according to new research. AP/Vincent Thian

In Malaysian Borneo, people are contracting a form of malaria that usually has been found only in monkeys. Now scientists say they may know why. In a study published in the scientific magazine *Emerging Infectious Diseases*, researchers say that deforestation is to blame for the spread of the disease in the Southeast Asian country. Cutting down trees in rain forests is causing the environment to change, and that is believed to spread malaria.

The disease is caused by a parasite that feeds off of its host, and is spread by mosquitoes. People with malaria often experience fever, chills and flu-like illness. Some patients develop severe complications and can even die. In 2013, there were almost 200 million cases of malaria worldwide and 500,000 patients died, mostly children in Africa.

In Malaysian Borneo, scientists noticed an increase in a form of malaria caused by the parasite *Plasmodium knowlesi*. Malaria of that type is usually found only in monkeys called macaques. However, in the last decade, the parasite has also become the leading cause of human malaria in the country.

Parasite Spreading Faster On Borneo

Malaysian Borneo is also known as East Malaysia and has beaches, rain forests and national parks. It is on the island of Borneo in Southeast Asia. The island is just north of the equator, and is surrounded by the South China Sea, the Sulu Sea and the Celebes Sea. It is the third-largest island in the world, and is shared by the countries of Malaysia, Brunei and Indonesia.

Scientists wanted to know why the parasite was spreading faster on the island than it had before. It is found in macaques but transmitted to people by mosquitoes, just like other forms of malaria. Researchers thought an environmental disturbance might be at the root of the change.

"That's when we started looking at deforestation," says Kimberly Fornace, the study's lead author. She works for the London School of Hygiene and Tropical Medicine in England. Fornace says she and her team suspected that clearing trees in the rain forest was causing people, mosquitoes and macaques to be in closer contact.

Information On Disease And Forests Compared

Fornace and her team looked at information about malaria patients. They focused on those who had the disease between 2008 and 2012. The information came from health centers in Kudat and Kota Marudu, two Malaysian districts. The scientists recorded where patients contracted the disease and compared it to satellite images of deforestation happening in the same time period.

The team found higher rates of infection in areas where many trees had been cleared in the years before an outbreak of human malaria. Areas with more than 65 percent of their forest uncut also had high malaria rates. Scientists call this the edge effect.

The term describes an ecosystem that goes through a large amount of change at the edge of a plant's or animal's habitat, or natural environment. The edge effect tends to be strongest where people have left parts of the ecosystem standing, but divided it up by logging and clearing trees.

Humans, Macaques Closer At Edge Of Forest

Fornace says she and her team believe malaria is transmitted at the edge of rain forests, where people and macaques are coming into contact. Mosquitoes are carrying the parasite from the monkeys to humans.

Researchers say that the macaques' habitat is becoming more divided. The monkeys are forced to crowd into smaller areas and even leave the forest to look for food. Because the animals are closer to people, mosquitoes can more easily spread malaria.

Fornace says the research gives scientists an opportunity to better understand which regions are experiencing the highest rates of disease transmission. Then they can create better risk maps to help decrease infection.

She also says that human actions do not just alter the environment, they also can have an impact on human health. Policymakers should plan to use land more responsibly when it comes to public health, she says.

Results Similar In Amazon Studies

Margaret Kosek is an assistant professor at Johns Hopkins University in Maryland. She says, "These findings are consistent with other studies emphasizing the importance of deforestation in the transmission of malaria." Kosek also says that it is important to offer good public health care to people who live near the rain forests.

Kosek has done malaria research in the Amazon rain forest in South America in Peru. She says that deforestation has been tied to malaria spreading in other parts of the world, but how much of a factor it is depends on the setting.

She says there are other things that might make the problem worse. For example, people living in places where rapid deforestation is taking place might not be able to get good medical care.

Studies show that deforestation has also affected outbreaks of other diseases. Dengue fever, yellow fever, certain tick-borne illnesses and Ebola have all spread faster.

Other research in recent years has focused on how environmental disturbances due to climate change might affect the spread of disease. Another factor is human populations forced to move due to conflict, disaster or development.