Committee: World Health Organisation

Issue: Eradicating mosquitoes in order to combat diseases

Student Officer: Agapi Andreakou

Position: Deputy Chair

Dearest delegates,

My name is Agapi Andreakou and I will be serving as the deputy chair of the World Health Organisation in the 5th CSMUN. I am in my senior year of high school and I am attending the 2nd Senior High school of Gerakas. I have participated in 5 MUN conferences with this one being my first time chairing. When I attended the CS MUN conference, I had one of the best experiences I have ever had and I hope that you shall have a pleasant experience as well. The topic of this study guide is the eradication of mosquitoes in order to combat diseases. This is an issue that is very important to be informed about, since it affects the majority of the world, for hundreds of years . Millions of deaths are caused by mosquito borne diseases, every year. Such viruses include the Zika virus, Malaria, West Nile virus, chikungunya, yellow fever, filariasis, tularemia and many more. Also it is very important to be aware of the symptoms of these diseases, as well as the ways that they can be prevented.

My fellow co-chairs and I are here to support you and help you in any possible way throughout the conference. You can contact us at any point with every question that you have either concerning the topic or concerning the rules of procedure. I strongly encourage you do not solely rely on this study guide and do individual research in order to provide you with adequate information on the topic.
I greatly look forward to this conference as I strongly believe there will be a fruitful and constructive debate throughout the two days.

Feel free to contact me if you may have any questions at: agapiandreakou@yahoo.gr
Best regards,
Agapi Andreakou

TOPIC INTRODUCTION

The issue of eradicating mosquitoes is a crucial issue that has been affecting multiple countries for many years, and thus an effective solution must be found. Although there are hundreds of species of mosquitos, only 6% of those can actually transfer diseases. Furthermore, only females are able to do so thus the title can be a considered slightly misleading as it does not refer to the 'complete' eradication of all mosquito species. Female mosquitoes obtain nutrients by drawing blood from an infected organism ultimately transferring the virus to this organism. Mosquitos, are also able to travel long distances in order to obtain food and furthermore they can live only in areas

with water, which means that although diseases are most prevalent in particular areas - there is the possibility of them spreading globally.

The mosquito has officially been named as the most dangerous animal on the planet, and has caused the death of millions of people through the transfer of notable viruses and parasites which cause lethal diseases not limited to the West Nile Virus (WNV), the Eastern equine encephalitis (EEE), Zika virus, Chikungunya virus, Malaria, and Yellow fever etc. These diseases will be described in more depth later. The number of people affected is, in most cases, increasing which ultimately has detrimental implications for the economy seeing fewer people are willing to travel to affect nations for trips.

This problem of disease-causing mosquitoes is predominantly prevalent in Less Economically Developed Countries (LEDCS) with limited access to medical help. Those countries include the south American countries, for example Brazil and Argentina, and the African countries, such as Nigeria, which are suffering for many years from certain mosquito transmitted viruses, like Malaria, and they still do not have the ability to treat all those people who have been affected. The question of eradicating the entire mosquito population is a highly controversial one primarily because it may have terrible side effects on the environment, a key one being the implications on food chains. The majority of the mosquitos draw nectar from plants and are necessary to the reproduction and further existence of plants, so it is thereby vital to take this into consideration. Scientists have found numerous ways such as the use of biotechnology, to eradicate mosquito species. This will be discussed in more depth further on.

A lot of agencies and organisations have been persistently trying to raise global awareness about this issue, primarily in MEDCs. As most LEDCS lack access to health care as well as education, this causes the population to be unaware both of the symptoms of the mosquito borne diseases and the ways that they can be prevented. The World Health Organisation that the most effective solution, in order to protect the population, would be the eradication of all mosquito breeding sites. In conclusion a genetically modified mosquito has been submitted to the WHO for evaluation by a WHO Vector Control Advisory Group.

DEFINITION OF KEY TERMS

Eradication[1]

Eradication by definition means to completely destroy something, sometimes with the help of a chemical solvent.

Biocontrol[2]

Biological control by definition means: “the control of pests by interference with their ecological status, as by introducing a natural enemy or a pathogen into the environment. ”There are actually more than one ways to implement biocontrol and this is a solution that is common in order to control the mosquito population and especially the species that are the most dangerous.

[1] "Eradication." *Dictionary.com*. Dictionary.com
[2] "Biocontrol." *Dictionary.com*. Dictionary.com

Source reduction

As it is commonly known mosquitos exist and can only survive in areas with water. So a logical and practical solution in order to eradicate mosquitos in inhabited areas, is to remove the water. One way of accomplishing that is, for example, to drain puddles.

Parasites[3]

Parasites are by definition: “an organism that lives on or in an organism of another species, known as the host, from the body of which it obtains nutriment.”Although some parasites might be beneficial to the human health others, that are transmitted by mosquitos, might be deadly.

Ecosystem[4]

Ecosystem by definition is a system which is formed by the the balanced coexistence of different species with their environment. So that balance can be easily affected by the extinction of a species.

Vector[5]

Vector by definition is: “an insect or other organism that transmits apathogenic fungus, virus, bacterium, etc.” in this category of insects belong the mosquitos.

DDT[6]

It stands for Dichlorodiphenyltrichloroethane and it is : “ a white, crystalline, water-insoluble solid,: used as an insecticide and as a scabicide pediculicide: agricultural use prohibited in the U.S. since 1973.”. It was used in World War II, in order to combat the malaria virus through killing mosquitos, but it was later banned from the most developed countries because of its effects on human health.

BACKGROUND INFORMATION

As mosquitoes are the source of many diseases, they have caused millions of deaths worldwide for centuries. However, the fact that mosquitoes are able to transmit diseases to other organisms through the suction of blood was not discovered till 1887. Later, in 1898, scientists discovered that the malaria disease (which scientists estimate has existed around 2700 BC) is transmitted through a specific species of mosquitos.

Notable diseases include the Chikungunya, discovered in Africa in 1952, which later spread around Asia, Europe and America. Similarly, the Zika virus first appeared in Uganda in 1947 and now, numerous cases have been reported in European, Asian and American countries. The virus has become particularly prevalent in South American nations such as Venezuela. Many scientists have claimed that the Zika virus is the source of other rare diseases, such as microcephaly which appears in newborns and decreases the size of their brain often leading to death. The West Nile Virus has been discovered in Uganda in 1937. The biggest outbreaks have been in many countries, such as Greece, USA, Israel, Romania and Russia. The malaria virus has affected all continents except

[3] "Parasite." *Dictionary.com*. Dictionary.com
[4] "Ecosustem." *Dictionary.com*. Dictionary.com
[5] "Vector." *Dictionary.com*. Dictionary.com
[6] "DDT." *Dictionary.com*. Dictionary.com

Antarctica. This virus was, probably, firstly discovered by 2700 B.C. in China, and it has, since then, affected millions of people.

TIMELINE OF EVENTS

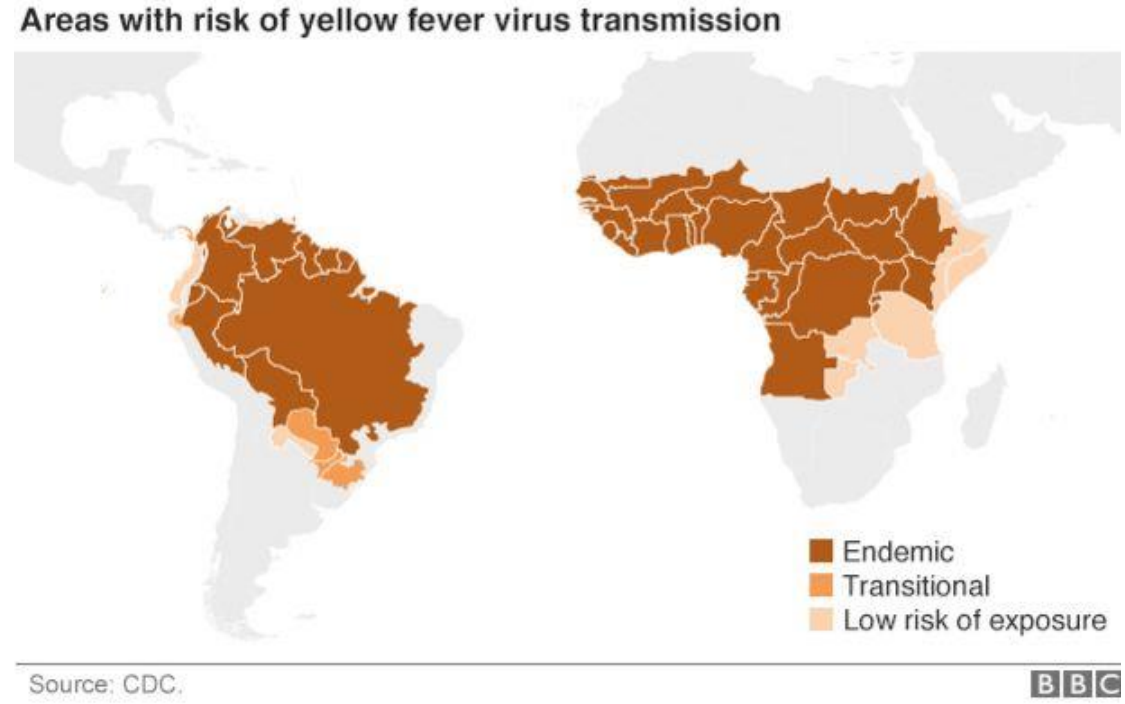
Date	Description of Event
1897	Ross Ronald discovered that mosquitoes can transmit the malaria virus
1943	DDT was invented, but it was later banned from a lot of developed countries
7th April 1948	The World Health Organisation (WHO) was established
1999	The West Nile Virus (WNV) was introduced in the USA and was later spread in Canada and Venezuela.
2007	Increasing cases of the Zika Virus being reported worldwide
28th May 2010	UNICEF promotes a campaign about providing nets as a means to prevent mosquito-borne diseases aimed towards households in the Central African Republic
1st February 2016	The World Health Organisation declares a Public Health Emergency of International Concern and with the cooperation of the UN health agency, they assist countries in conducting Zika virus testing. At the same time they urge all households and communities to be as prepared and informed as they can about the effects of mosquito transmitted diseases.
13th April 2016	The European Parliament passed a resolution on the Zika virus outbreak (2016/2584(RSP).[7]
10th May 2017	The UN environmental agency creates a platform named "Global Mosquito Alert" and manages to bring together scientists and volunteers in order to work together and combat mosquito borne viruses
31st May 2017	In the 70th session of the World Health Assembly, the "Global vector Control Response 2017-2030"[8] was implemented which aims to improve the management of the population of vectors and to implement measures in order to combat diseases
1st June 2017	The World Health Assembly,the BRS Conventions and the UNEP propose measures that can be taken in order to control the growth of the mosquito population, through water and waste management

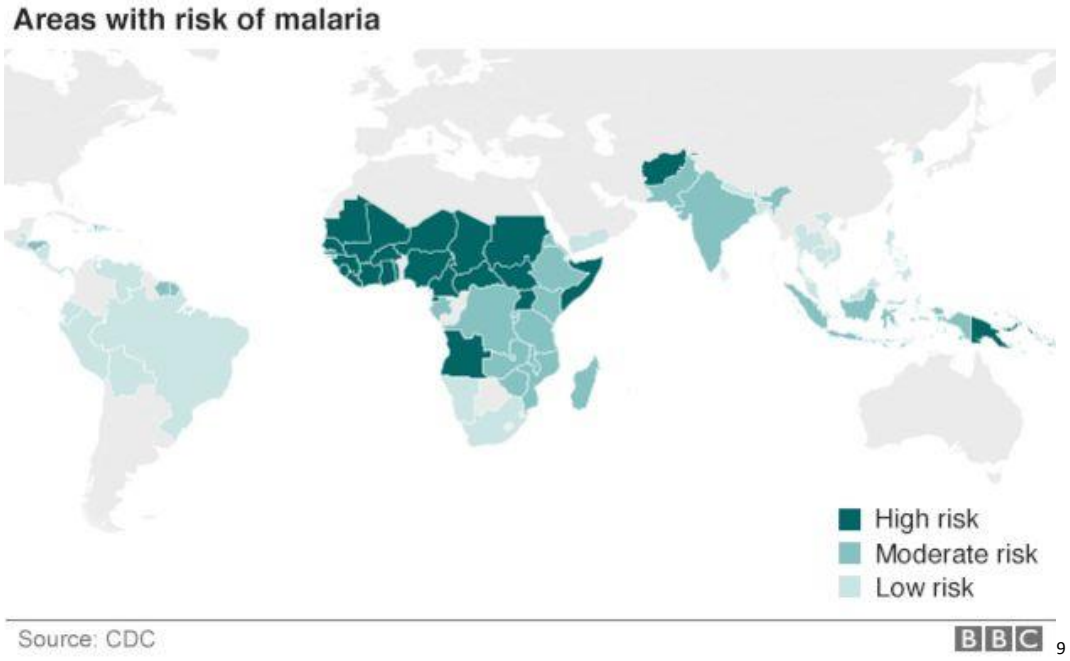
[7]" *Texts adopted*" - Wednesday, 13 April 2016 - Zika virus outbreak - P8_TA(2016)0122 : http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P8-TA-2016-0122+0+DOC+XML+V0//EN

[8] http://www.who.int/malaria/areas/vector_control/Draft-WHO-GVCR-2017-2030.pdf?ua=1&ua=1

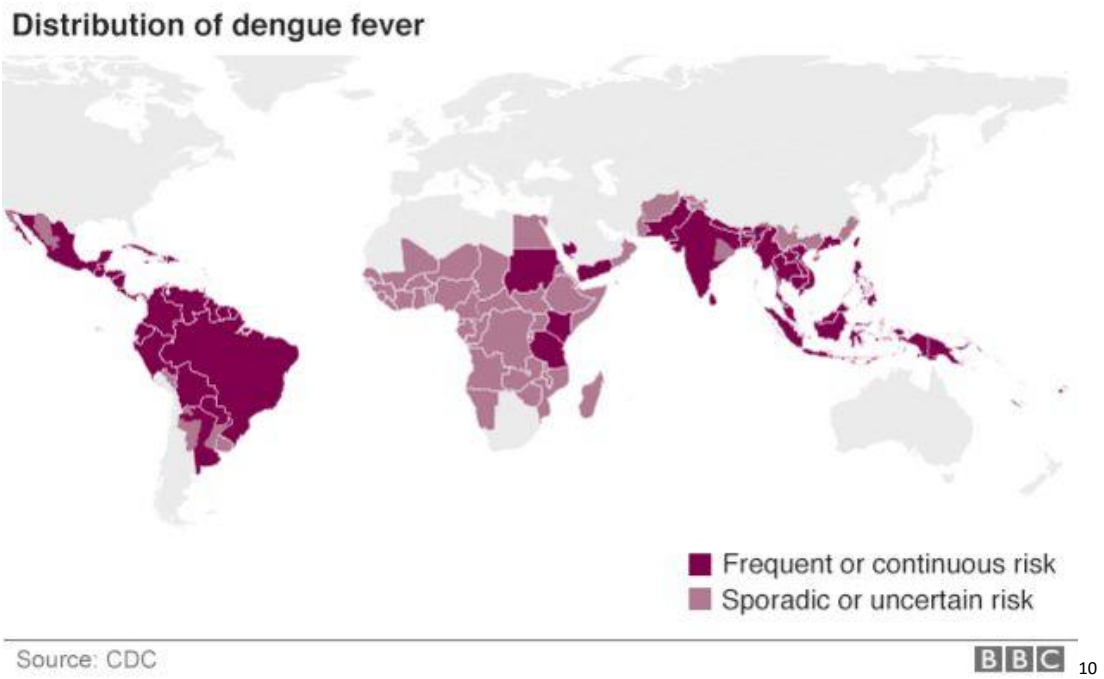
MAJOR COUNTRIES AND ORGANISATIONS INVOLVED

Below you can see some maps that show which countries are most affected by certain mosquito borne viruses.

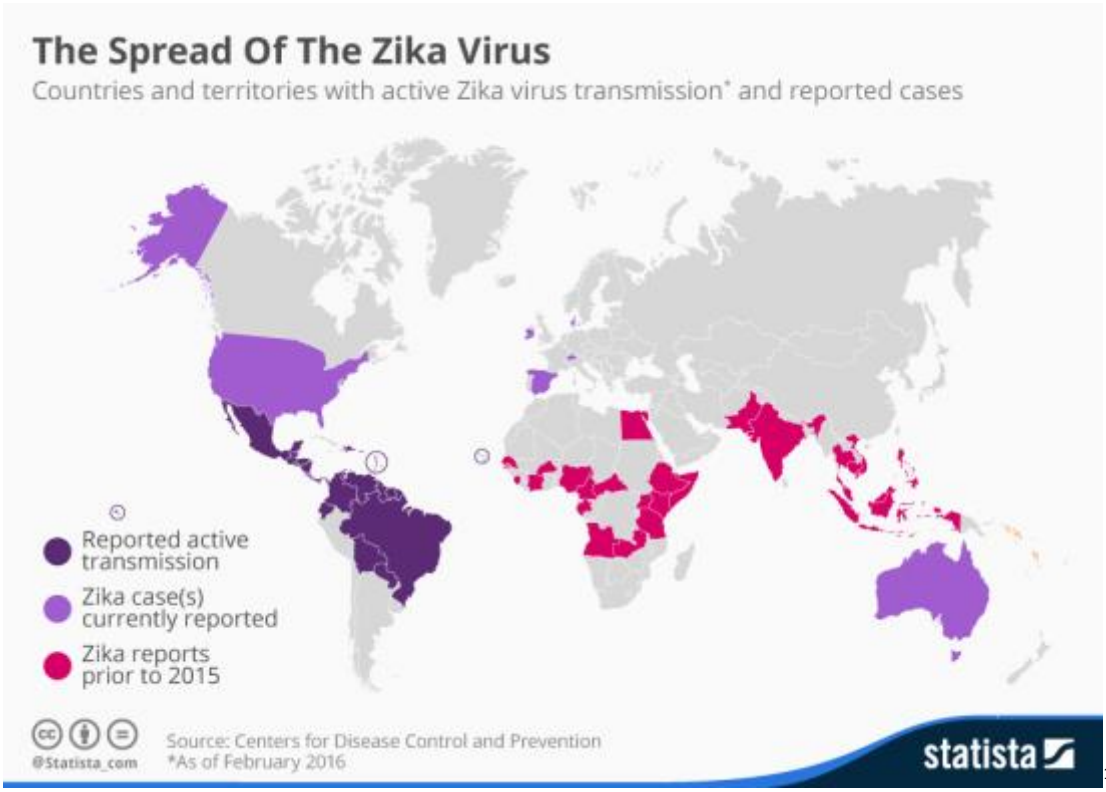




[9] *"Would it be wrong to eradicate mosquitoes?".* BBC NEWS. january 28,2016. Claire Bates



[10]



[11]

As you can see, the majority of the countries, especially in the southern hemisphere, are being affected by the mosquito transmitted diseases.

[10] *"Would it be wrong to eradicate mosquitoes?".* BBC NEWS. january 28,2016. Claire Bates

[11] "*MAP: The spread of the Zika virus"* . traveller.com . february 8,2016

SOUTH AMERICA COUNTRIES

Argentina

The numbers of Zika Virus cases has appeared to grow in Argentina. The government of Argentina in collaboration with the World Health Organisation are trying to limit the disease. Also on March 2016 the first case of the chikungunya virus was reported in the World Health Organisation and since then about 80 cases of chikungunya have been reported and confirmed.

Brazil

A lot of outbreaks of the Zika virus and the chikungunya virus were reported in Brazil at the beginning of 2017. Although they have decreased in number, the problem is still affecting thousands of people, especially newborns. Brazil has implemented, with success, the alteration of the genes in male mosquitoes, in order to stop their ability to reproduce. The cases both of the Zika and the Chikungunya virus have been reduced, as a result of this measure.

Venezuela

The Zika virus is very prevalent in Venezuela, with almost 700,000 people affected by the disease. The government and special organisations are trying to control this epidemic in order to prevent further spreading however the problem still remains thus measures still need to be taken.

AFRICAN COUNTRIES

Egypt

Egypt is one of the most affected nations. However, the Egyptian Ministry of Health and the health authorities have become more active in combating mosquito-borne diseases and thus, have taken strict measures in order to do so.These preventive measures include the use of insect repellant, protective clothing, and sleeping in either an air conditioned or well-screened setting or under an insecticide-treated bed net.

Nigeria

The first case of a human affected by the Zika virus, happened in Nigeria in 1954. Since then the virus has been spread around Africa, Asia and south America, causing thousands of deaths. In order to combat malaria, Nigeria adopted the National Malaria Control Programme in 2008. Because of this program by 2010 the percentage of households with at least one long-lasting impregnated mosquito net reached 70%. This is a huge difference since in 2008 that percentage was at only 5%.

Uganda

The Zika virus has caused immense suffering in Uganda. Uganda also has one of the highest number of cases of Malaria, about 16 million annually. Also, as it has been previously mentioned, the West Nile virus (WNV), was firstly discovered in Uganda in 1937. More recently, in 2016 Uganda has been affected by the Yellow fever, another mosquito borne disease.

ASIAN COUNTRIES

Malaysia

Malaysia has suffered from the dengue fever, with almost 50,000 cases every year. Currently they are trying to implement biological control through genetically modified mosquitoes. In December 2008, experts took part in a discussion on the United Nations Development Programme (UNDP) at IMR in order to debate upon the risk assessment with Malaysian and regional scientists and regulators, concerning this method of biocontrol.

POSSIBLE SOLUTIONS

Below are some solutions that can be incorporated in your resolution. However, it should be noted that these must be elaborated on and further research is needed for you to propose your own measures that correspond with your country's policy.

- Firstly, non-governmental organisations (NGOs) can organise fundraisers, in order to help countries that are affected by the issue. This can include the creation of hospitals in areas where they are lacking or with programmes that may train doctors. This is vital since the majority of countries that are affected by mosquito-borne viruses do not possess means to maintain the virus.
- NGOs can also organise campaigns, in order to raise awareness about the prevention of any infections or possible symptoms. Not only will this prevent further outbreaks, but it will allow for a faster diagnotion. It should be noted that these diseases can easily be transmitted through infected travelers (who may not show apparent symptoms) who then carry the disease back to their nation. An example where this occurred was the Zika virus.
- Collecting standing water is another solution. Eliminating the areas where mosquitoes can survive, reduces the risk of an epidemic. This method has been successful in reducing the mosquito population in countries like Italy, Israel, India, Brazil and Egypt. Generally, governments need to take proper measures in order to decrease (or even eliminate) the population of mosquitos in inhabited areas.
- Biocontrol is another way to control the growth of a certain species. Biological control is the release of natural enemies of the specific species in the environment, in order to control its population, or to control its area of living. This is a method that seems to be successful if it is implemented correctly. One specific method of biological control has been successfully implemented in the United States of America and it has reduced the population of malarial vectors.
- Governments need to promote scientific research in order to develop methods of technology, specifically biotechnology, that can be used to control the mosquito population, such as monitoring their population with mechanical traps.
- Something else that scientists and experts are working on, is the release of genetically modified organisms, which can also help diminish the growth of certain species of mosquitos. However, this solution is yet to be approved as a practical, effective and ethical solution. You must thereby research what your country's policy is on this matter.

BIBLIOGRAPHY

- Malaria Outbreak in Northern Uganda." *InterHealth Worldwide*. N.p., 5 Feb. 2016. Web.
- "Is Nigeria winning the battle against malaria? Prevalence, risk factors and KAP assessment among Hausa communities in Kano State". *Malaria Journal.* 2016.
- " PAHO WHO | Regional Zika Epidemiological Update (Americas)" *Pan American Health Organization / World Health Organization* May 25, 2017
- "Malaria" *Centers for Disease Control and Prevention .August 14, 2014*
- " Endemic Countries" *Roll Back Malaria*
- "Texts adopted" - Wednesday, 13 April 2016 - Zika virus outbreak - P8_TA(2016)0122
- " Zika virus: UN agencies step up response measures following declaration of public health emergency". *UN News Center.* February 02, 2016
- " UN-backed network brings together thousands to help tackle mosquito-borne diseases" *UN News Center .* May 10, 2017
- "UN Initiatives Fight Mosquito-Borne Disease | IISD's SDG Knowledge Hub | IISD" . July 14, 2017. *IISD's SDG Knowledge Hub*
- "Why Eradicating Earth's Mosquitoes To Fight Disease Is Probably a Bad Idea". *Motherboard*
- " Should we wipe mosquitoes off the face of the Earth?". *The Guardian.* February 10, 2016
- " Mosquito control" *Wikipedia.* July 05, 2017
- "Would it be wrong to eradicate mosquitoes?". *BBC News*. January 28, 2016. Claire Bates
- " Mosquitoborne Diseases" . *Diseases that can be Transmitted by Mosquitoes - Minnesota Dept. of Health*
- "Executive summary". *World Health Organization*
- "Mosquito-borne diseases". *World Health Organization*
- "Mosquito wars" *World Health Organisation*