

Myles Sakshaug

Kenley Farrel Memorial Scholarship

24 October 2011

### Mosquito Borne Disease and Society

The impact of mosquito borne disease on society is an incredibly complex issue that can be analyzed from many different perspectives. There is no questioning the simple fact that mosquitoes have affected the human population for many years. Along with the infection inflicted on humans through mosquitoes, many animals have been the recipients of disease causing deaths. As this issue is further analyzed the amount of money spent on prevention and other attempts to lessen the damage done by mosquitoes can also be said to have had a great affect on society. The damage from mosquito borne diseases can be traced back to early human history.

The greatest impact of mosquito borne disease is directly on humans and the lives that these diseases have taken. Mosquitoes throughout the history of mankind have affected the lives of many humans. Gary Miller, an entomologist, has written about the affects of insects on the Civil War. This is something that is often overlooked. Mosquitoes amplified many deadly events in human history. In Miller's research, he compiles excerpts from soldier's personal journals. One confederate soldier referred to the mosquitoes as of a "preponderous size-almost able to shoulder a musket" (Miller). The lack of advancements in the medical field and sanitation heightened the effect of mosquitoes and overall death toll of the Civil War. This greatly affected society at that time in history. This was an early example of the devastation that mosquito borne diseases can cause. (Miller)

As time has proceeded, the mosquito has adapted to elude human attempts to subdue

these pests. An incredibly large amount of money has been sent on sending money and mosquito nets to Africa to reduce the spread of malaria. The popular show, American idol, raised more than twelve million dollars for mosquito nets in Africa. (McNeil) There is no refuting the incredible compassion and kindness that comes out of such selfless gifts, but this money could be used for other things. The need to combat mosquitoes puts a financial tax on society. In reality, there is no choice but to delegate money towards the fight against the spread of mosquito borne disease.

In present day situations, mosquito borne diseases affect human lives on every continent of this world. In his article, "Across Asia, Dengue Fever Cases Reach Record Highs," Yenni Kwok tells the story of a woman from Koh Phangan Island that contracted dengue fever. It had extremely harmful effects on her health and temporarily crippled her. Dengue has had an immense impact on Asia as a whole. 465 people in the Philippines lost their lives to this infectious disease in the first eight months of 2010. This particular disease is prevalent in warm, tropical areas including some of the world's most densely populated areas. There have been many efforts to reduce the impact of these diseases, but the dense population creates many opportunities for the mosquitoes to spread disease. (Kwok)

There have been many attempts to create a vaccine to fight malaria, the most common disease transmitted by mosquitoes. The John Hopkins Malaria Research Institute was formed about ten years ago through a one hundred million dollar gift. Mosquitoes transmit malaria to humans through four types of *Plasmodium*. This disease affects many people and experts have predicted that between three hundred and five hundred million people annually. The death toll is said to reach about one and a half million people each year. Diane Griffin, a John Hopkins researcher, stated, "Drug companies are unlikely to invest a lot of research dollars when you're

talking about a market in the developing world” (\$100 Million). This institute plans to center the research for a vaccine and answer the simple questions to reach their ultimate goal. This institute is a representation of the great impact of mosquito borne disease on society. Hundreds of millions of dollars has been spent on research towards a vaccine for these diseases. Many researchers have poured years of time and energy into the cause. In this way, it has had an affect on many individual lives and society. (\$100 Million)

Another effect of mosquito borne diseases is the massive movement to eradicate harmful numbers of mosquitoes through the use of pesticides. Pesticides can be extremely helpful in reducing the number of pesky mosquitoes, but have been shown to have adverse effects on human health. Asthma can be heightened by exposure to pesticides. There has been a strong correlation between farmers and asthma in recent years. There are certain types of pesticides that can cause birth defects. Other pesticides have an effect on hormone secretion in the body. They can disrupt natural body cycles and alter male and female reproductive organs. Pesticides have also created neurological effects including light-headedness and the long-term effect of brain damage. At least thirty-seven pesticides have been proven to cause cancer in animals if exposure reaches a certain point. (Health Effects)

Mosquitoes do not only infect humans with diseases, they can infect livestock and other household pets. Cattle have been shown to be susceptible to infections from mosquito bites. These diseases can be easily spread in high concentrations of livestock and cause a decrease in available food. These infections can create birth complications in female cattle. (Flies and Mosquito) Heartworm disease is a common effect of mosquito borne disease on household pets. The increase of heartworm and heartworm medications has greatly affected society through the common family pet. (AMCA)

Pesticides often contaminate runoff water and are washed away into rivers, lakes, and streams. This contaminated water can kill massive amounts fish and other aquatic water life decreasing a crucial food supply for the human population. Fish provide food and recreational use for our society, and the pesticide pollution can have a large affect on certain fish. The effect does not stop with the animals; pesticides can also cause destruction of habit by killing plants. Many pesticides can affect plants, which reduces the food source of many animals, further altering the food chain. The use of pesticides must be closely monitored to maximize the positive effects on society by reducing the number of mosquitoes without causing harm to the other plants and animals. (Helfrich)

Mosquito borne diseases often have an overwhelming effect in the world economy. The large population of people that become sick or die from these diseases takes away from the productive work force of the world. Many businesses operate in areas that are heavily plagued with mosquito borne illnesses. One example is the oil giant, Marathon Oil. This particular company has oil reserves located in Bioko off the coast of Equatorial Guinea in Africa. They have launched a large-scale plan to reduce the number of mosquitoes in that area. Disease has caused the people of this area to become exhausted. The lack of a motivated work force caused Marathon to temporarily suffer. Along with the reduction of mosquitoes as a result of Marathon's efforts has come a rejuvenated society. (Gorman)

There are an uncountable number of ways that mosquito borne diseases affect society from the early stages of human history all the way to the present. Countless humans have lost their lives from contracting a disease that research could not find a vaccine to cure. Many animals have also contracted diseases, which cause a decrease in the amount of food available to feed the population of the world. An endless amount of money continuously flows to areas

greatly affected by these diseases in hopes of saving lives. These tiny insects have even gone as far as affecting sectors of the global economy. It is incredibly important for all people to have knowledge of the dangers of mosquito borne diseases, and what can be done to reduce the suffering that these afflictions can cause.

## Works Cited

- "\$100 Million Dollar Gift Funds Malaria Institute." *Johns Hopkins Magazine*. John Hopkins University. Web. 07 Oct. 2011. <<http://www.jhu.edu/jhumag/0601web/oncampus.html>>.
- AMCA. "Mosquito-Borne Diseases." *AMCA*. American Mosquito Control Association. Web. 06 Oct. 2011. <<http://www.mosquito.org/mosquito-borne-diseases>>.
- "Flies and Mosquito Borne Diseases." *Infonet-Biovision*. Infonet-Biovision, 11 Aug. 2011. Web. 23 Oct. 2011. <<http://www.infonet-biovision.org/default/ct/720/animalDiseases>>.
- Gorman, Christine. "Corporate Responsibility: Marathon Fights Malaria - TIME." *Time Magazine*. Time, 20 Aug. 2006. Web. 06 Oct. 2011. <<http://www.time.com/time/magazine/article/0,9171,1229120,00.html>>.
- "Health Effects of Pesticides." *Environmental Education Curriculum Provided at Kids for Saving Earth (KSE)*. Healthy Child Healthy World, 2003. Web. 23 Oct. 2011. <<http://www.kidsforsavingearth.org/mnchec/articles/pesticides.htm>>.
- Helfrich, Louis A., Diana L. Weigmann, Patricia Hipkins, and Elizabeth R. Stinson. "Pesticides and Aquatic Animals: A Guide to Reducing Impacts on Aquatic Systems - Home - Virginia Cooperative Extension." *Virginia Cooperative Extension*. Virginia Tech. Web. 23 Oct. 2011. <<http://pubs.ext.vt.edu/420/420-013/420-013.html>>.
- Kwok, Yenni. "Dengue Fever Cases Reach Record Highs Across Asia - TIME." *Breaking News, Analysis, Politics, Blogs, News Photos, Video, Tech Reviews - TIME.com*. Time, 24 Sept.

2010. Web. 06 Oct. 2011.

<<http://www.time.com/time/world/article/0,8599,2021265,00.html>>.

McNeil Jr., Donald G. "A \$10 Mosquito Net Is Making Charity Cool - NYTimes.com." *The New York Times*. The New York Times, 2 June 2008. Web. 06 Oct. 2011.

<<http://www.nytimes.com/2008/06/02/us/02malaria.html>>.

Miller, Gary L. "Historical Natural History: Insects and the Civil War." *American Entomologist* 43.4 (1997): 227-45. Entomological Society of America. Web. 06 Oct. 2011.