

## The Climate Change Connection

### How the Changing Climate is Shaping the Future of Infectious Disease

With national greenhouse gas emissions increasing every year, it's no surprise that climate change is quickly and drastically changing life as we know it. It's all a chain reaction: as more heat gets trapped in the atmosphere due to these gases, temperatures rise around the globe. As temperatures rise, so does the sea level, affecting weather patterns and causing changes in precipitation. But how does this impact infectious disease, specifically in Massachusetts? And what is being done to fix it?



Figure 1 *Aedestaeniorhynchus*

First, let's connect climate change with public health problems. Rising greenhouse gas emissions can bring a slew of problems, most notably an increase in temperature. Higher temperatures means warmer winters and hotter summers, perfect for an increase in vector-borne diseases like Eastern Equine Encephalitis, Lyme, and West Nile, already common in Massachusetts. Similarly, rising temperatures can bring about changes in precipitation such as increased flooding, which may in turn increase public health risks. Greater amounts of stormwater and agricultural runoff may bring sediments, bacteria, nutrients and pesticides to local waters, creating hazards for the quality of swimming, fishing, and/or drinking water. Damage to coastal infrastructure such as power plants, drinking water pipes, and wastewater treatment plants may increase the risk of water-borne illnesses such as E. coli and adenoviruses. This is a strong concern for coastal areas, such as the Cape, Seaport, and the Islands. Having already experienced recent outbreaks of EEE and E. coli over the past two years and witnessing their effect on communities of Massachusetts, it is important that all necessary actions are taken to prevent the return of these public health hurdles.



Figure 2 Seaport District, Boston

So how is the state of Massachusetts working to combat this increasing threat? Last year, the city of Boston updated their climate action plan. This plan has three major goals: prepare for the impacts of climate change, become a zero waste community, and protect natural resources. The Massachusetts Department of Public Health, Resilient MA, and the City of Boston have also been working closely to develop plans to lower greenhouse gas emissions, and eventually, go carbon free. As less greenhouse gases enter the environment, we may be able to witness some significant change in temperatures, hopefully reversing the damage already caused. Community health centers and other organizations are constantly working to raise awareness about the dangers of infectious disease and how individuals can protect themselves. Taking all of this hard work into account, it is possible to switch the direction of this growing danger, as long we all stay involved and aware.

Sources Cited: Ng, V., Rees, E. E., Lindsay, L. R., Drebot, M. A., Brownstone, T., Sadeghieh, T., & Khan, S. U. (2019). Could exotic mosquito-borne diseases emerge in Canada with climate change?. *Canada communicable disease report = Releve des maladies transmissibles au Canada*, 45(4), 98–107. <https://doi.org/10.14745/ccdr.v45i04a04Public Health>. (n.d.). Retrieved from <http://resilientma.org/sectors/public-health>