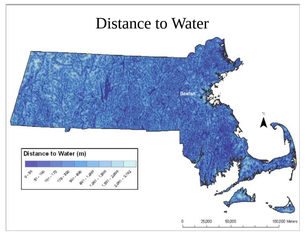
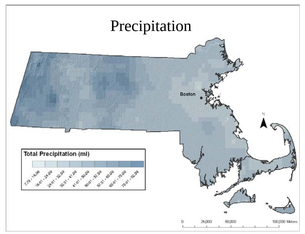
Vulnerability to Mosquito Born Disease in Massachusetts:
Looking at Mosquito Habitat Suitability

Elements of Mosquito Habitat:

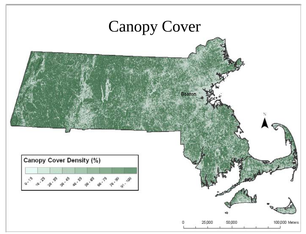
Proximity to Water: The closer to water, the more suitable the habitat



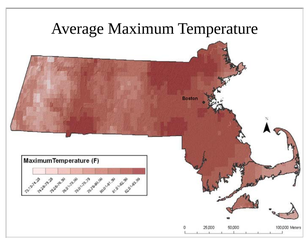
Precipitation Levels: The higher the precipitation level, the more suitable the habitat



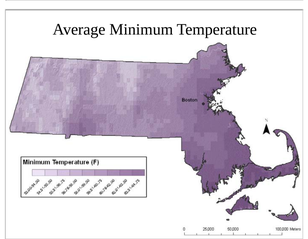
Canopy Cover: The higher the density of canopy cover, the more suitable the habitat



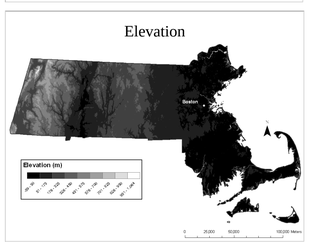
Maximum Temperature: The higher the maximum temperature, the more suitable the habitat



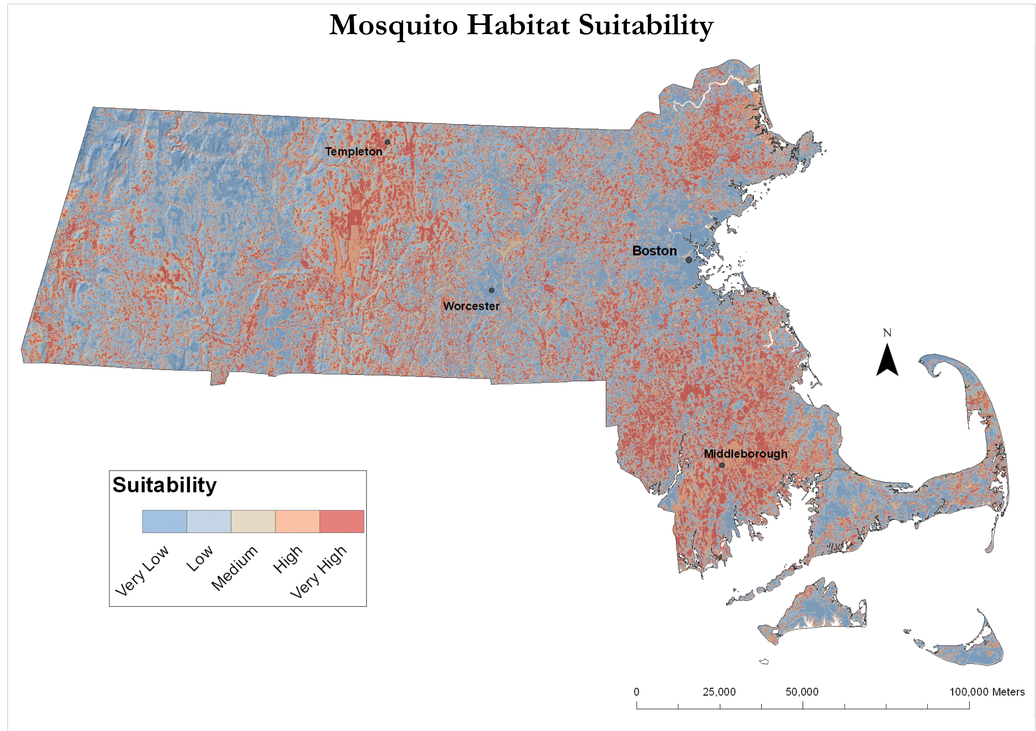
Minimum Temperature: The higher the minimum temperature, the more suitable the habitat



Elevation: The lower the elevation, the more suitable the habitat



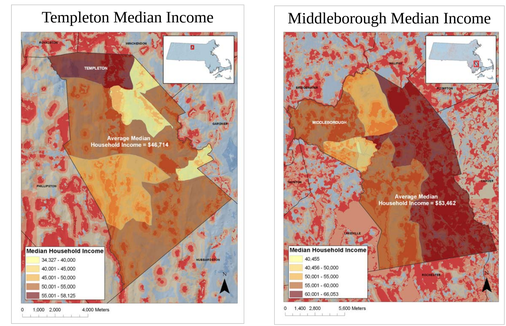
Suitability:



Finding Prime Mosquito Habitat:

To find prime mosquito habitat in Massachusetts, I created maps of the six described elements of mosquito habitat that ranked prime habitat for that element high and least suitable habitat for that area low. For example I created a map of distance to water bodies with areas close to water bodies ranked high and areas far from water bodies ranked low. I then combined, or performed an "overlay", of these rankings to get an overall ranking of suitability. In combining the elements, I weighed each according to its importance in mosquito habitat. Proximity to water was given the most weight transitioning down the list on the left to elevation, which was given the least weight. Above is the overlaid map. The map displays that much of Massachusetts provides prime habitat for mosquitoes, supporting that mosquito born disease is an important issue for Massachusetts residents, healthcare providers, and policy makers. The map also displays that there are centers of both very low and very high habitat suitability. This may prove important in minimizing the spread of mosquito born disease by targeting key habitat areas.

Vulnerability:



Looking at Demographics:

Those living in areas of prime mosquito habitat are more vulnerable to mosquito born disease. To further study the vulnerability of these populations, I looked at the demographics of two towns with overall high suitability (Templeton and Middleborough) and two towns with overall los suitability (Boston and Worcester). Above are maps of the median household income for the four towns projected over the suitability analysis. This analysis showed possible lower median household income in the towns with lower risk, but much further analysis is needed. All towns studied displayed average median incomes below the state average of $53, 624.

Cartographer: Alice Graff
Course: Intro to GIS Fall, 2008
Data Sources: Mass GIS, PRISM Group (accessed at http://www.prism.oregonstate.edu/), National Land Cover Data.