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Warming Climate Changes Vermont Disease

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Introduction

• The average annual temperature in Vermont has gradually increased roughly 1° Centigrade with an increase of 1.16 inches of annual precipitation over the past 112 years. [i]
• According to expert analysis, humans are responsible for 60% of the warming over the past 140 years. [ii]
• Projected greater than 1° Centigrade increase in global temperature by 2100 and a correlated rise in precipitation. [v]
• Climate changes result in the introduction and reproduction of non-endemic flora and fauna.
• Vector-borne diseases accompany warming trends and can become endemic and cause new illnesses in areas which were previously uninhabitable. [ii]

Methods

• Research of global climate change, temperature, weather patterns seen in Vermont and vector-borne diseases as potential threats to Vermont was completed.
• Current temperature projections were used to approximate Vermont’s future climate.
• An analysis of vector-borne disease in states with climates similar to that projected for Vermont was conducted.
• Lyme disease was investigated in depth as an example of how climate change has lead to the invasion of new vectors and their diseases.
• The precedent set by the migration of Lyme disease into Vermont was used as a model to create a list of other vector-borne diseases that could be seen in Vermont in the near future.
• Information was condensed to be distributed to local physicians and general public to raise awareness.

Results

Evidence

• Please use caution and follow all product directions when applying natural and chemical repellents.
• Be informed about symptoms and when to call the doctor.
• Effectsiveness may vary with product use.

References

[i] Hoffman-Contois, Razelle2 MS; Bress, William3 PhD.; Carney, Jan1, M.D. MPH
[ii] Baker, Elizabeth1; Meyer, Matthew1; Mu'Min, Asya1; Oliver, Lindsay1; Oppenheimer, Daniel1; Perrins, Steven1; Young, Whitney1

Prevention

Mosquito Tick Mouse

Natural Chemical Mechanical Behavioral

• Use screens or cement screens, wear functional respirators, and remove standing water which were previously uninhabitable. [ii]
• Climate changes result in the introduction and reproduction of non-endemic flora and fauna.
• Vector-borne diseases accompany warming trends and can become endemic and cause new illnesses in areas which were previously uninhabitable. [ii]

Conclusions

• The temperature and amount of annual precipitation has been increasing in Vermont.
• Expected warming trend to continue in the near future.
• Patterns of climate change have led to the invasion of new insect species and the diseases they carry.
• Lyme disease did not exist in Vermont 20 years ago, but is now prevalent in the state.
• Incidence of Lyme is predicted to increase as winters become milder and summers become longer.
• West Nile Virus is expected to expand its natural habitat into Vermont with warmer temperatures.
• Other diseases with similar temperature-based migration patterns to Lyme are Hantavirus, Eastern Equine Encephalitis and other mosquito-borne encephalitides, Rocky Mountain Spotted Fever, and possibly even malaria.

[https://www.climatechange.vt.edu/ClimateChange2020/ClimateChange2020.html]
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