



How Climate Change Impacts Zoonotic, Vector-borne, and Environmental Fungal Disease in Washington State



CLIMATE AND DISEASE RISK

Zoonotic and vector-borne diseases are caused by infectious agents that spread from animals and arthropods (such as mosquitos and ticks) to people. Environmental fungi can be found in soil and other parts of the environment. Climate change is expected to impact zoonotic and vector-borne as well as environmental fungal diseases in Washington State. Shifts in weather patterns could make it easier for these diseases to spread into new areas. Milder winters, warmer summers, and changes in rainfall may change the distribution of animals and arthropods that carry and can spread disease.



Environmental conditions and habitats influence the distribution of animals, arthropods, and the pathogens they can carry. The following diseases are expected to pose an increased risk to people in Washington state:

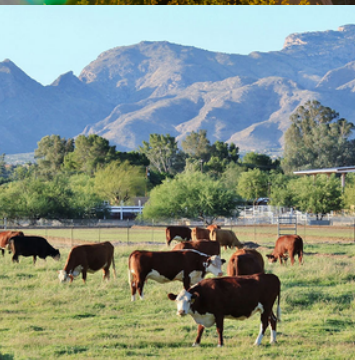


- Anaplasmosis
- Babesiosis
- Relapsing Fever
- Lyme disease
- Valley Fever
- Cryptococcus gattii
- Hantavirus
- Leptospirosis
- Rickettsioses
- Tularemia
- St. Louis Encephalitis
- West Nile virus



MOSQUITO-BORNE DISEASES

Warmer average temperatures throughout the state could result in expanded mosquito distribution. Warmer temperatures also speed up the life-cycle of mosquitoes, allowing adult mosquitoes to mature faster, increasing people's risk of exposure to West Nile virus (WNV).



The relationship between drought and spread of WNV is complex. Climate experts anticipate increased frequency of drought due to climate change. Drought can reduce mosquito habitat. However, scarce water sources can also bring bird host reservoirs and vector mosquitoes closer together, thereby helping amplify the virus. Mosquito habitat created by irrigation systems can likewise offset the impact of drought conditions.



TICK-BORNE DISEASES

Changes in temperature and precipitation may impact the geographic distribution and seasonality of ticks. These changes lead to increased risk of tick-borne diseases.



OTHER ZOOBOTIC AND VECTOR-BORNE DISEASES

Changes in climate affect animal behavior. Extreme weather events, such as flooding or wildfires, can bring animals into closer contact with people or their environments. These increased interactions between animals and people can lead to greater risk of zoonotic and vector-borne disease.



ENVIRONMENTAL FUNGAL DISEASES

Environmental fungi like *Coccidioides* (which causes Valley Fever) and *Cryptococcus gattii* are susceptible to the impacts of climate change. Environmental conditions and soil characteristics influence the ability of these fungi to survive. Climate changes, like increased temperature and reduced rainfall, may cause expanded distribution of *Coccidioides* and *Cryptococcus gattii*.



EQUITY

Certain populations are at higher risk of exposure to zoonotic, vector-borne, and environmental pathogens, including those who work outdoors. Occupational risk for disease may increase for firefighters, agricultural workers, construction workers, and others, including migrant workers.



KEY TAKEAWAYS

- Relationships between animals, arthropods, the environment, and people are complicated and will be influenced by climate change.
- As climate change impacts become more frequent and intense in Washington State, an increased risk of some zoonotic, vector-borne, and environmental fungal diseases is expected.



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