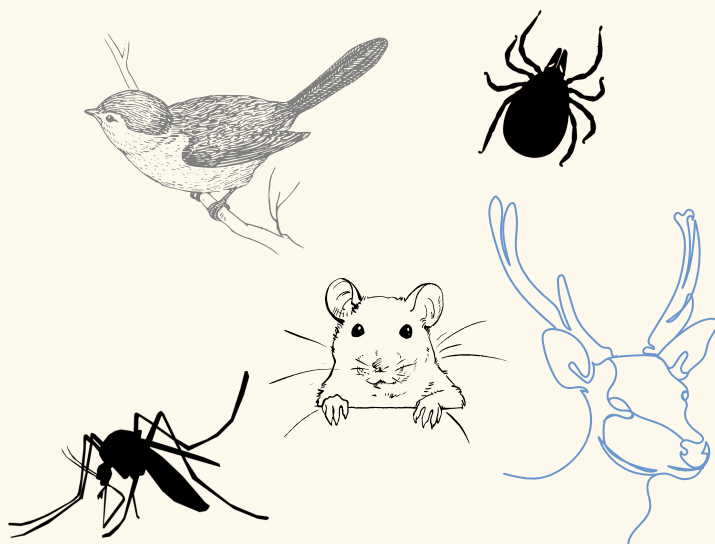


ISK CLIMATE CHANGE & HEALTH SERIES

VECTORS & ZOOBOTICS issue

What's inside:

1. Vector-borne illnesses
2. Zoonotic diseases
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Vector-borne illness

In terms of organisms, a vector is an insect or animal that transmits disease from one organism to another. Specific vectors vary across the globe, and can include bedbugs, lice, fleas, ticks, mosquitoes, biting flies, rodents, etc. While bats, raccoons, skunks, and foxes can transmit rabies in Michigan, cases are rare and our vectors of concern are primarily ticks and mosquitoes. Some illnesses can be contracted right here in the Mitten, and others are mainly a risk to people traveling outside of Michigan. It's important to remember that if a traveler returning to Michigan with an illness more commonly found in another country or state is bitten by a Michigan vector while infected, the illness can be spread to other Michigan residents. It's therefore important to ensure we are healthy when we arrive home from traveling. In general, people who work or enjoy leisure time outdoors (including children!) have a higher risk of contracting these illnesses. Use the table and links below to check out the illnesses associated with each of these vectors, their symptoms, and where you could contract them.

Vector	Illnesses caused	More Informatoion
Mosquitos	At home: <ul style="list-style-type: none"> • West Nile Virus • Eastern Equine Encephalitis (EEE) Virus While Traveling: <ul style="list-style-type: none"> • Zika Virus • Dengue • Chikungunya 	<ul style="list-style-type: none"> • State of Michigan: Mosquitos and Your Health • Zika Travel Map • Areas With Risk of Dengue • Areas At Risk of Chikungunya
Ticks	At home: <ul style="list-style-type: none"> • Lyme Disease <ul style="list-style-type: none"> ◦ the most common, but other rare diseases can occur; see first link -----> 	<ul style="list-style-type: none"> • Michigan's Five Most Common Ticks • Lyme Disease Heightens Risk of Mental Disorders, Suicidality

Zoonotic diseases

...or *zoonoses*, are diseases transmitted between humans and other animals. Some of us might be familiar with this term from Covid-19 origin investigations, as it has been suggested that the virus could have been transmitted by bats, which are a common source of zoonotic diseases. While vector-borne illnesses are included under the umbrella of zoonotic diseases, bites are not the only way zoonoses can be transmitted; they can also be transmitted through direct contact. Examples of non-vector-borne zoonoses in Michigan are Swine Influenza (from pigs), Salmonella (from chickens or, rarely, from hedgehogs), and Pseudocowpox (from cattle). These three are associated with livestock contact, so farmers or others in regular contact with livestock are more at risk.

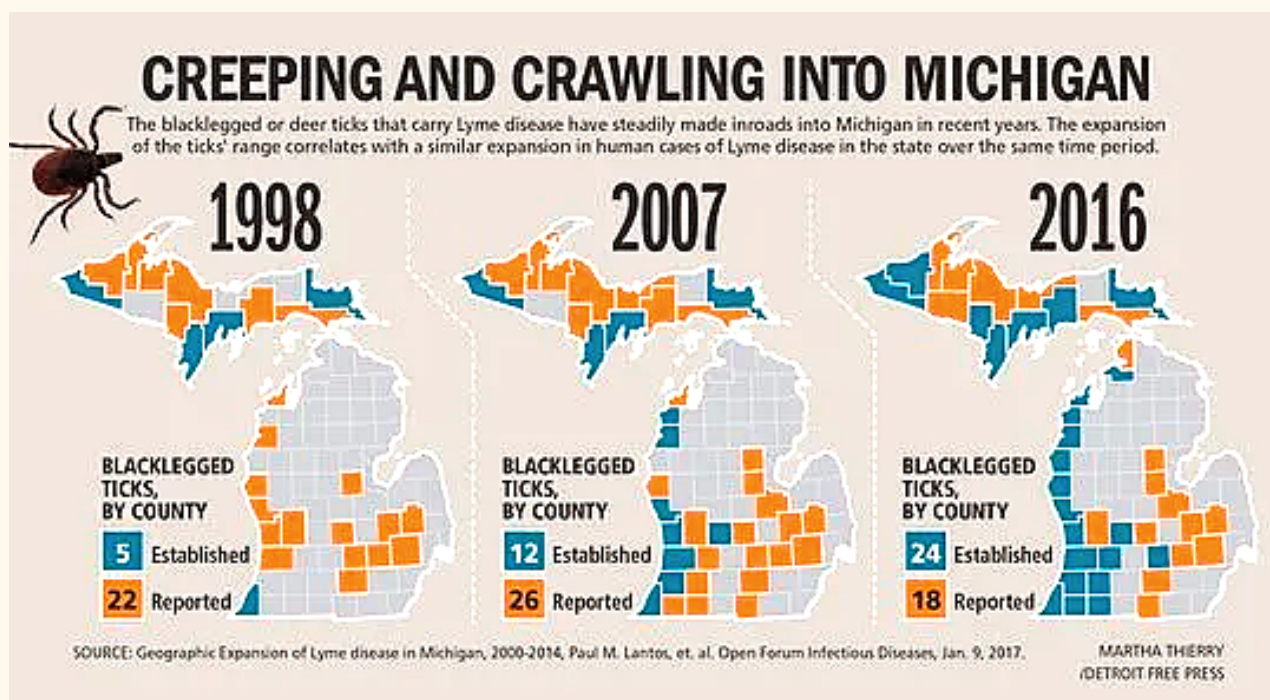
Risks from wildlife also exist, including Avian Flu (more commonly known as "bird flu," originating in birds) and Bovine Tuberculosis (bTB) (from wild deer and cattle). These are both airborne and transmittable through physical contact. About 2% of US TB infections are caused by bTB. While human infection with Avian Influenza is rare, it can occur.

Climate change: an amplifier

Zoonotic and vector-borne illnesses have existed for hundreds of years—so what's this got to do with climate change?

Climate change is altering our seasons substantially. As average temperatures increase and rainfall patterns change, ticks and mosquitos are spreading to new areas. The figure below shows the increase in prevalence of Blacklegged ticks— also called "deer ticks" and known to carry Lyme—in Michigan from 1998 to 2016. Ticks, and mosquitos to a lesser extent, are also experiencing conditions that help them thrive, such as warmer, wetter winters. This means our vector season is expanding and tick and mosquito populations are growing. Ticks, which are active in any temperature above freezing, are even becoming more common in winter months like February.

Just as transmitters of disease are having an easier time surviving in a warming Michigan, so are the diseases themselves. Increases in average temperatures and shifts in other climatic variables like humidity and precipitation can improve conditions for diseases like Avian Influenza and bTB.



Actions to take

Here are some things we can do personally and professionally to adapt and stay safe:

Vector-borne illnesses

Personal:

- Use an effective insect repellent on yourself and any children for whom you are responsible
- During high tick season (April to September), perform daily tick checks after being outdoors.
- Avoid tick-infested areas like tall grasses and woodlands
 - If using trails or enjoying the outdoors, use repellent and/or protective clothing.
- Avoid mosquito-infested areas like standing water and marshy areas.
 - If mosquitos are prevalent in an area you frequent, use repellent/protective clothing.
- Bathe/shower regularly
- Know the signs and symptoms of these illnesses so immediate medical action can be taken (particularly important with Lyme, which becomes less treatable the longer the infection lasts).

Professional:

- Talk to clients about these illnesses and vectors and educate them on the personal action steps they can take to stay safe.
- Know the mental health risks of Lyme.
- Keep a healthy supply of pamphlets or infographics about vectors and vector-borne/zoonotic illnesses ready for clients to take home.
 - particularly important with clients whose work is outdoors or on a farm, or clients who live in potentially infested areas (rural and/or wooded areas, etc.)

Zoonotic Diseases

Personal:

- Practice food and water safety
 - cook meat thoroughly (especially chicken) and wash hands after touching raw meat
 - Going hunting? Have your deer tested for bTB before consuming the meat
 - BONUS: Help scientists track Chronic Wasting Disease in deer by also testing for that! Not zoonotic, but very harmful in the wild.
 - Have your home's water tested regularly, or request that your landlord do so.
- Keep hands clean and wash them regularly
 - particularly important if you've been in contact with livestock or wild animals, whether or not you touched them directly
- Never touch or pick up a sick or dead animal, including birds

Professional:

- Talk to clients about these illnesses and educate them on the personal action steps they can take to stay safe.
- Keep a healthy supply of pamphlets or infographics about zoonotic illnesses ready for clients to take home.
 - particularly important with clients whose work is outdoors or on a farm, or clients who live in potentially infested areas (rural and/or wooded areas, etc.)



Let's talk

Don't forget the doggos!

Dogs and other pets can endanger their humans by carrying vectors, especially ticks, inside the home. They can also suffer from diseases like Lyme! Talk to your vet about flea/tick prevention and a Lyme vaccine for your pet. Also, apply the personal action steps from the table above to your pets!

This month, talk to your colleagues about vectors and zoonoses:

- Do they have any tips for staying safe?
- Have they noticed a difference in the prevalence of vectors in recent years?
- Do vector-borne or zoonotic illnesses ever come up when working with clients?

Find further reading [here](#), [here](#), and [here](#)!