Critters

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As winter is relaxing its grip, the inevitable consequence is the emergence of critters. A few weeks ago, the Fire Department was called out for a rescue on Buttermilk Lane that involved walking through some high grass. A number of us had a substantial tick infestation after that, so they are out. Knox County is ground zero for Lyme in Maine so far this year but we also have anaplasmosis and babesiosis. These tick-borne diseases are supposed to be reported to the Maine CDC but there are probably many more cases that are not reported. Going back to 2016, South Thomaston ranks #5 in the State for tickborne diseases after Isleboro, North Haven, Deer Isle, and Vinalhaven.

Here are some data from the State from last year and some from two years ago:

Disease	Cases (2023)	Cases (2022)
Lyme	2706	2652
Anaplasmosis	738	
Babesiosis	173	
Hard tick relapsing fever	12	
Powassan	5	4
Alpha-gal	5	
Erlichiosis	2	

So, here is a brief review on so-called “vector-borne” diseases and how to keep safe.
A disease vector is something, either an animal, an insect, or even an inanimate object, that transmits disease without getting sick itself. The most common vector-borne disease in the world is malaria that causes over 200 million cases worldwide, killing 400,000, mostly children. Good news: no malaria in Maine, or home-grown in the United States for that matter. Not the same with dengue (pronounced “den’ gay”) fever, sometimes called “breakbone fever” because why? It feels like your bones are breaking. Until recently, dengue, a mosquito-borne virus, was not seen in the continental US. It is endemic, meaning consistently present, in Puerto Rico and some of the tropical territories like Samoa. But in recent years, there has been spread of dengue in Southern states and Hawaii. No dengue in Maine – yet.

Here, we have ticks and mosquitoes causing disease. And yes, the dreaded browntail moth is a vector for the allergic condition but not for infectious disease. The main Maine ticks are Ixodes scapularis, the deer tick, and Dermacentor variabilis the American dog tick (impress your friends at the back yard BBQ with those names). Of these, the deer tick is by far the most common vector in Maine.

Here are some tick pictures to scare your children. But ticks are hard to identify, and each tick should be considered dangerous. The female (usually larger) is the villain.


Deer tick


lone star tick


dog tick

Tick-borne diseases of Maine	
Tick	**Disease**
Deer tick (Ixodes scapularis)	Lyme, anaplasmosis, babesiosis, Powassan, tick paralysis, erlichiosis
Lone star tick (Amblyomma americanum)	Erlichiosis, tick paralysis, alpha-gal
Dog tick (Dermacontor variabilis)	Tick paralysis, ?Lyme

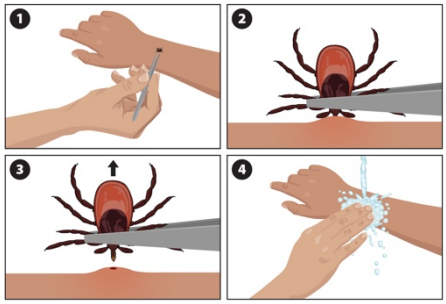
Lyme (not "lyme's") disease is the one every one knows. It was named by Alan Steere in 1975 after Lyme, Connecticut where he observed the outbreak of severe arthritis disease in children that he called "Lyme arthritis". Here is a link to a podcast about the origins, if you are an interested public health nerd: https://podcasts.apple.com/us/podcast/the-discovery-of-lyme-disease-with-dr-allen-steere/id1027430378?i=1000370691828. Lyme disease usually starts when the right person encounters the right tick. The characteristic "bullseye rash" appears 1-2 weeks after the tick bite.

Some tick bites have an early red rash appearing at the site, but that's not erythema migrans, the classic Lyme rash pictured here. Remember that up to half of the people with Lyme will NOT have the classic rash. Other symptoms include fatigue, the feeling of fever or chlls, headache, loss of appetite, and muscle aches and pains. Also, since anaplasmosis can also be carried by the same tick, it is possible to get both infections. Unlucky you. Anaplasmosis also has a rash and fever but there are also more serious effects including neurologic symptoms of headache and mental status changes. The bottom line is that these illnesses require medical attention and the sooner the better to avoid late complications.

Just a word about Powassan and alpha-gal since people may not have heard of them. Powassan virus is named after Powassan, Ontario where it was first identified in 1958. Not all people who are infected get sick, but those who do can develop a severe brain infection. Alpha-gal is also known as mammalian meat allergy or red meat allergy. The tick stimulates the production of an allergy protein called IgE directed against galactose-alpha-1,3-galactose (aren't you glad to know that?) also called alpha-gal. Reactions range from mild rash and itching to severe, even life-threatening allergic reactions to mammalian meat like beef, pork, or lamb. There is no specific treatment for either Powassan or alpha-gal although symptoms of alpha-gal can subside spontaneously after a few years if there are no more lone star tick bites.

Tick paralysis is a scary illness that, fortunately, is very rare. It is caused by the bite of the female tick (many species carry it). After the tick is engorged, she secretes a neurotoxin that causes progressive weakness and ultimately paralysis. The good news, besides it being exceedingly rare, is that recovery is complete once the tick is removed. While we're on the subject of removal, here are the steps:

1. Grasp the tick as close as possible to the skin surface with a fine-tipped tweezer.
2. Pull upward with steady pressure. If mouth parts break off, remove separately if possible.
3. Clean area with soap or isopropanol.
4. Do not crush tick. Dispose in alcohol or in the toilet. Please avoid nail polish, Vaseline, heat, or a match head or any one of a million folk remedies.



Mosquito-borne diseases are enormously consequential worldwide. Here in Maine, we had no human cases reported last year although there were animal isolations of a variety of viruses including JC virus, Eastern Equine Encephalitis Virus (EEE), and West Nile Virus, so zoonotic (animal to human) transmission is possible. Some awful ones like dengue and Zika have not made their way to us…yet. Mosquitoes have been called the "avatars of climate change" because they respond so rapidly to changes in the environment. Worst case scenarios show that Maine could have 6 months a year of Aedes aegypti infestation by 2080. That is the mosquito that carries yellow fever, dengue, Zika, chikungunya, and other diseases that we now consider "tropical".

Scared yet? Don't be. These illnesses are 100% preventable. In Maine, mosquitoes are most active at dawn and dusk, and they go away when temperatures are consistently below 50^{o}. Mosquitoes are domestic creatures, they live and die close to home, in stagnant water. So, control of breeding areas such as standing water and poorly draining gutters will help control the population. Water in tires is impossible to empty and they generally fill with organic matter that is pure paradise for the female, biting mosquito. Tires have been called "mosquito condos." If you can't get rid of them or you use them for garden swings, drill holes in them so they drain. If you are outside during prime biting times, cover up as much as possible. Light colors seem to be less attractive to the females. You can also treat your clothing with 0.5% permethrin that will repel both mosquitoes and ticks. There are a number of commercially available insect repellants that work as well. Predators provide some natural control of mosquitoes. Bats and birds are often cited as important natural controls for mosquito populations.

Let me close with a word about the browntail moth. These guys are unique to the Northeast, primarily from Maine to Cape Cod. They preferentially infest hardwoods like oak, apple, and birch, although they can feed on broadleaved shrubs as well. It's the hairs on the caterpillar that come loose and float around causing major skin and respiratory allergies. They have been observed in every county in Maine. The nests are the webs in the trees. These webs have to be cut out and either burned or destroyed in another way. Just cutting them down and leaving them on the ground does no good. By now, it is too late to control them this way but keep in mind for next spring. In fact, the caterpillars are now about in their 4th stage of life which has maximum numbers of hairs. The Maine Forest Service does an aerial survey each year and the infestation in South Thomaston looks mild when compared with inland, north and west from Rockland. They don't call it Spruce Head because there are a lot of oaks. But I have had them on my birch trees, so keep a close lookout for those nests. Maine CDC has a massive amount of information on this web page: https://www.maine.gov/dhhs/mecdc/infectious-disease/epi/vector-borne/browntail-moth/.