

## **Ticks: An Informative Article**

### ***How to Identify Ticks***

Ticks are very small arachnids that can vary in size depending on if they have recently eaten a blood meal. They are flat and oval in shape, and have eight legs in their adult stage. The patterns and colours of the ticks vary depending on the type of tick. Blacklegged ticks, or deer ticks, are black with a reddish brown backside. Lone star ticks are a reddish brown colour with a white dot or star on their back. Lastly, dog ticks are a reddish brown with a white-ish circle on the upper back of the tick. When full or half fed, all ticks will turn a whitish-grey colour and be much larger than unfed ticks. Ticks like to crawl towards the warmest part of their host, such as armpits, and behind the knees. When the tick is not moving and appears to be missing a head, it is most likely that the tick's head is buried in the skin, this is how they bite. Once under the skin, the tick feeds on the blood of its host. At this time, the tick will be transmitting any diseases it may carry.

### ***Life Span***

Ticks go through several life stages, or instars, before they reach maturity. Between each of the stages of the ticks life, it needs a blood meal to evolve to the next stage. The tick starts out as an egg and hatches into a larva. From the larval stage the tick needs a blood meal in order to evolve into a nymph. The tick will feed for three days before molting its outer layer of skin. Before the nymph can become a full adult it needs another blood meal. The tick can survive for quite some time before this process happens. Once an adult, the tick needs one last meal before it is able to reproduce. Once the ticks lay their eggs, they die. Some ticks can require up to three years to go through all these life stages.

### ***Types***

There are three main types of ticks currently in Ontario including Blacklegged ticks, American Dog ticks, and the Lone Star Tick. Blacklegged ticks are the main carriers of the bacteria *Borrelia*, which causes Lyme disease. It is estimated that approximately 25% of Blacklegged ticks carry the bacteria. The American Dog tick is the most commonly found tick in Ontario but does not generally transmit the bacteria for Lyme disease. Lastly, the Lone Star Tick is a newly found tick in Ontario, coming up from the southern US. This tick can transmit diseases such as Rocky Mountain Spotted Fever,

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Ehrlichiosis, and Starli borreliosis. They can also cause their hosts to produce an antibody called Alpha-gal which can cause an allergy to red meat, dairy and gelatin.

### ***Habitat***

Ticks are generally found in climates that are more humid and warm. They have a longitudinal geographical range from South America to North America, and a latitudinal range all the way to Europe. Ticks generally live in tall grasses, overgrown vegetation, and woody areas. Ticks can be found where wooded areas meet lawns as well as under leaves and ground cover. They can also be found in wood piles and around stone walls. Ticks are unable to fly or jump far so they attach onto their prey by falling off of vegetation or tree trunks onto their host as they pass by.

### ***Tick Migration***

Tick populations have been increasing in numbers in Southern Ontario for the past few decades. A study by M Kulkarni *et al.*, discusses how Eastern Ontario is identified as a region of recent and ongoing expansion of tick populations and with it an increase in cases of Lyme disease. He believes that with recent climate change, environmental factors such as warmer temperatures and increased microhabitats are the cause for the increase in tick populations. Another article by JD Scott *et al.*, suggests that migratory songbirds are also a culprit in the spread of disease infected blacklegged ticks to areas in Southern Ontario.

### ***Diseases***

Blacklegged ticks are vectors for disease, including a bacteria known as *Borrelia Burgdorferi* that causes the infamous Lyme disease in humans. Lyme disease generally produces a red ring-like rash around the bite that occurs a week after the host has been bitten. Other early symptoms can include fevers, and joint pain. Antibiotics are the primary treatment for Lyme disease, but if left untreated, Lyme disease can cause permanent damage to the joints, nerves, hearts, eyes, and brains of infected individuals.

Lone star tick populations have also been increasing in North America, and with it cases of Southern Tick-Associated Rash Illness (STARI) and Alpha-gal allergy or mammalian meat allergies. STARI is a similar rash to the rash seen in Lyme disease and can also result in a fever and flu-like symptoms. Because the rash resembles Lyme disease,

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doctors generally prescribe antibiotics. The Alpha-gal allergy is caused by an alpha-gal sugar molecule that is transmitted through a lone star tick bite. This transmission of the alpha-gal molecule can cause an allergy to red meat in the host. Reactions to red meat are often delayed compared to other food allergies but have similar symptoms.

### ***How to Protect Yourself***

There are many ways in which one can protect themselves from ticks and their diseases. People who spend lots of time outdoors in tick habitats should always wear long sleeves and long pants and be sure to tuck in any openings in clothing, such as pants into socks and shirts into pants to prevent any skin exposure. DEET should be used to ward off ticks from biting the skin and wearing light coloured clothing is also helpful. The biggest precaution to prevent diseases from ticks is to always check for ticks as soon as someone removes themselves from a potential tick habitat. To reduce the amount of ticks around one's home, maintaining a well-cut and debris-free lawn is important as well as regular maintenance of shrubs and bushy gardens.

### ***More information***

For more information about ticks and the studies mentioned in this article, please scroll to the bottom of the Mosquito/Tick Control page on our website.