



## Animal Health FACTSHEET

# Lyme Disease in Newfoundland

### Introduction

Lyme Disease (LD), spread by ticks, is an illness affecting humans and domestic animals. The presence of the bacteria causing this illness was reported for the first time in this province in 2001, the first infection in a domestic animal was confirmed in 2004. This factsheet provides details on the disease and how it is spread.

### Background

LD was first identified in Lyme, Connecticut (USA) in the mid-1970's. Since then it has been located in most Canadian provinces and US States (primarily northeast). It is caused by a bacteria (*Borrelia burgdorferi*) spread by ticks. Infections in humans are rarely fatal but can be very painful and may result in long term medical problems. Illness in domestic animals, such as cattle, horses, dogs and cats can occur. It is not thought that wild animals can become sick.

### Ticks

Ticks are small, wingless relatives of spiders, mites and scorpions, that feed on the blood of mammals and birds. The most important for LD is the black-legged, or deer tick (*Ixodes scapularis*). For a more complete description of the ticks in this province, please see "The Ticks of Newfoundland".

### The Tick Life Cycle

There are four different stages in a tick's life; egg, larva, nymph and adult (Figure 1). The larva, nymph and adult must have a blood meal before progressing to the next stage (or before laying eggs). The life cycle (Figure 2), from eggs to adults then back to eggs, takes at least two years depending on the weather.

smaller for the larva (mice, voles, birds), through medium sized for the nymph (squirrels, chipmunks, birds) and larger for the adults (deer, humans) though these are not strict rules.

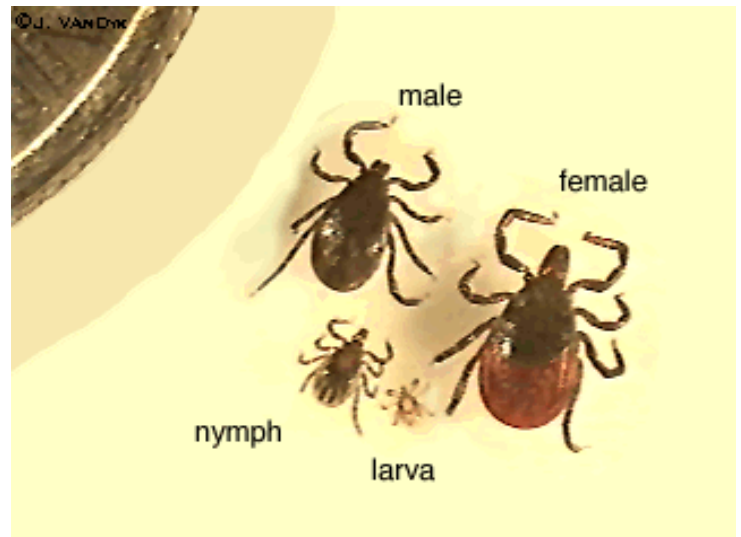


Figure 1: Stages of the deer tick beside a dime

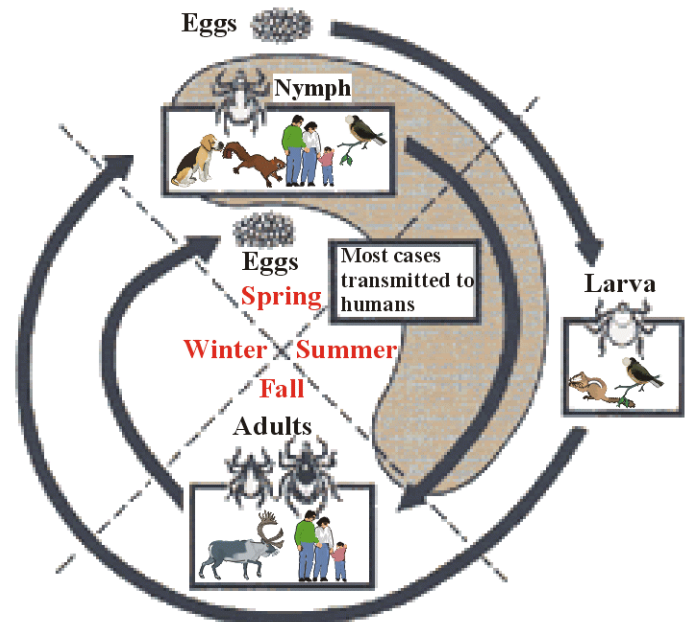


Figure 2: Life cycle of *Ixodes scapularis*

These stages feed on a variety of animals, usually

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The tick waits for a host while resting in bushes or tall grass. It senses an animal's presence by the increased levels of carbon dioxide which prompt it to attach to the animal when it brushes by (ticks can't jump or fly).

A female that has had a blood meal is called engorged and is much larger than one that hasn't fed. The male dies after mating and the female after laying eggs.

As the female does not pass LD to her eggs, it must be picked up from a wild animal during a blood meal. Usually the larvae or nymphs pick it up from a small mammal (such as the white-footed mouse), and then the nymph or adult spreads it to other animals (or humans) during their blood meals.

### **The Disease in Humans and Domestic Animals**

When a tick finds a new host, it usually takes hours before it finds a place to attach and once it has started feeding it usually won't inject the bacteria into the host for awhile longer. It is stated that infection usually does not occur before 24-36 hours after attachment.

Infected people will usually show a bull's eye rash at the spot of the attachment followed by fever, headache, muscle and joint aches and fatigue. If untreated it can lead to longer term health problems.

Dogs are apparently 50% more likely to become sick than humans. The disease is more difficult to diagnose in these animals as there is no characteristic rash. The common signs are fever, loss of appetite, acute lameness (without any other explanation) and sore joints.

### **Prevention of Lyme Disease**

The risks of contracting LD in Newfoundland exist though they are considered to be low based on national experience. The normal precautions for resisting bites (long sleeved shirts and long pants tucked in, use of an insect repellent with DEET) should be used. People walking through potentially infested areas should examine themselves after walking to see if any ticks have gotten on them. Removal of ticks is done by taking tweezers then slowly and gently pulling the mouthparts out of the skin, from as close to the skin as possible.

### **Geographic distribution of the disease**

In Canada, LD is most commonly seen in southern Ontario and British Columbia where the necessary conditions for survival of the tick appear to be most predictable. The disease is seen however elsewhere in

Canada and is considered to be on the increase.

In Newfoundland, with the assistance of the Public Health Agency of Canada and Memorial University, we have found infected ticks in almost all parts of the island. There have been no reports from Labrador. In 2004, for the first time, a dog was diagnosed with LD. It lived on the Port-au-Port Peninsula, had not left the province and had had a tick removed from it a few months earlier.

### **Further Research**

It is not known whether we have permanent populations of the deer tick in the province or just transient ones as the tick falls off of migratory birds coming in from further south. The current belief is that we only have temporary populations that do not last through the winter. Of the ticks that we have collected, approximately 11% are carrying the infection.

We also don't know which animals are important in maintaining the tick here. We don't have white-tailed deer or white-footed mice which are important elsewhere, but we do have other members of the deer family (moose and caribou) and a variety of mouse species.

### **Submissions**

Anyone finding a tick is asked to submit it to this office (or through public health, a veterinarian or a Conservation Officer) for identification and analysis. It should be put in a small container with moist cotton.

### **More Information**

Any questions on human illness should be addressed to a family doctor or local community health office, any questions regarding the health of domestic animals should be addressed to a local veterinarian. Other questions can be directed to the author.

### **Image source:**

**Figure 1:** Iowa State University

**Figure 2:** modified from US Center for Disease Control

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