

TICKS

Continued from page 1

1984, said ticks are evolutionary survivors, having originated some 15 million years ago in the area of the world that is now Russia. He discussed many factors that affect ticks, but ruled out climate warming in New England as one causing a rise in their numbers, noting that there are very few tick infections in the southern United States. If Nantucket's climate becomes hotter but remains dry that will be an advantage to us because moisture is what these critters thrive on, he said, explaining that ticks require 90 percent or greater humidity to survive and reproduce.

The bacteria that causes Lyme disease cannot live in temperatures above 70 to 80 degrees. Beyond that, ticks are cold-blooded, so when the temperature drops below a certain level their muscles cease to function, Dr. Telford said.

Tick reaction to weather conditions makes sense when compared with the calendar for Nantucket's busiest tick times. During their two-year life cycle, the pepper grain-sized deer ticks are in the larval stage and are most active in August, the island's most humid period, but they are not infected with disease at that point. The slightly larger nymphs are found from April through mid-July and a significant number of them are infected, making these ticks, and spring and early summer, the most threatening of all stages and seasons.

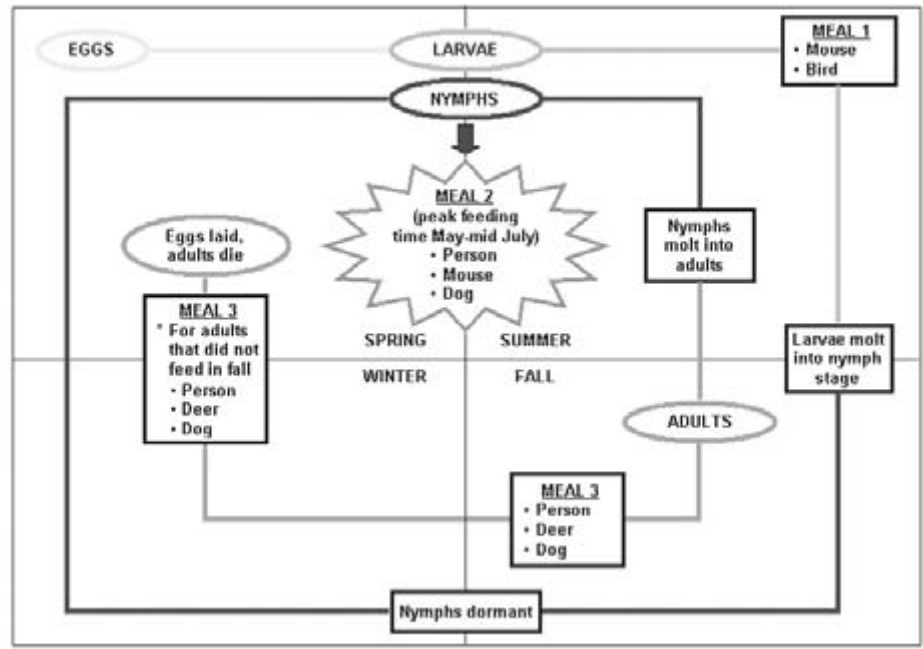
Humans have just 24 to 30 hours to discover and remove nymphal ticks before danger of infection. The ticks enter the adult stage in the fall, seeking blood meals that allow them to reproduce. Although mice and voles are the chief tick bacterial reservoirs, ticks need to feed on deer in the adult stage because an ingredient in deer blood is key to their reproduction.

The larger dog ticks have essentially disappeared since the advent of topical pet tick repellents such as Frontline, said Dr. Telford, who noted that he was on island just before Thanksgiving and believes tick numbers have diminished somewhat over the last four years he has monitored them.

As temperatures drop in winter, infected adult ticks may need from two to four days to feed on a host before disease is transmitted, both doctors said, which gives a human host greater opportunity to find and remove an imbedded tick before transmission can occur. Furthermore, in colder weather people walking in nature are dressed in layers which makes it harder for ticks to crawl beneath clothing.

Dr. Lepore said there were 188 cases of Lyme disease diagnosed on Nantucket in 2007; 45 to 50 cases of babesiosis and 14 cases of ehrlichia. The numbers are up from previous years. While Dr. Lepore said all three tick-borne diseases are treatable, some are more serious than others and in some instances can be fatal.

Two Year Life Cycle of Deer Tick (*Ixodes scapularis*)



TWO-YEAR LIFE CYCLE OF THE TICK

A tick's two-year life cycle begins in the spring of year one when adult ticks lay eggs in May. The eggs hatch into larvae during the first half of August and take their initial blood meal, often from mice or birds. At this point they may become infected with tick diseases.

Soon after the first feeding, the larval ticks enter a dormant stage until the spring of year two when they become nymphs and seek another blood meal. After this feeding they drop off their host and molt into adults. During the late summer through fall, the adults mate, usually on deer. The next round begins when the eggs laid by adults hatch in the spring.

The visible symptom of a bite, such as a bullseye red rash surrounding the spot where the tick was imbedded, may or may not appear.

"You may not see the tick that gets you," Dr. Lepore said.

If a bite is undetected and carries infection, later signs can include flu-like characteristics such as chills and fever and feeling exhausted, although it is nearly impossible to differentiate between a regular flu and the signs of a tick disease other than the time of year when symptoms occur.

"You have to have a persistent paranoid suspicion," Dr. Lepore said, speaking particularly about the warmest, most humid months. "There is no summer flu on Nantucket."

Because the blood test for tick diseases looks for antibodies which may take weeks to develop and which remain at elevated levels for months or years, Dr. Lepore recommends that people who believe they are infected begin antibiotic treatments as soon as possible and have a blood test admin-

istered at a later date.

The reason for the fast treatment is that Lyme disease left untreated is not fatal, but can cause arthritic symptoms, facial palsy and a drop in heart rate. Dr. Lepore said babesiosis seems fairly curable in children but older adults may experience problems with the spleen, kidneys and lungs because it causes a massive breakdown of red blood cells. Ehrlichia attacks white blood cells and can fatally affect the spleen, liver, kidneys and lungs.

"When people get sick with it it's like they were hit by a truck," Dr. Lepore said of ehrlichia, noting that a couple of islanders this year had close calls with spleen issues because of the tick diseases. The spleen sits near the stomach and is responsible for blood storage and blood cell condition.

Erik Wendelken contracted babesiosis in 1998 and Lyme disease this past summer. He said the babesiosis caused fever and chills and left him depleted of energy, a symptom he feels

See TICKS, page 14

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