

From the

## MILLBURN TOWNSHIP DEER MANAGEMENT TASK FORCE

### REPORT OF AUGUST 2006 APPENDIX 4: LIFE CYCLE OF THE DEER TICK

Lyme disease is a "vector-borne" disease. A vector-borne disease is a disease transmitted to humans by insects (typically mosquitoes,) or arachnids (typically ticks,) or by animals, which carry human disease-causing bacteria, viruses or parasites. The vectors generally spread the disease by feeding on the blood of their animal and human "hosts". Examples of vector-borne diseases are malaria (mosquito vector), plague (rat flea vector), Lyme disease (tick vector) and rabies (raccoon or dog vector).

*Borrelia burgdorferi*, the "spirochete" (a form of bacterium) that causes Lyme disease, is transmitted by the black-legged (or deer) tick, *Ixodes scapularis*. Like all tick species, deer ticks have a two-year life cycle, and require a blood meal from their host to progress to each successive stage in their life cycles. Ticks can be classified on the basis of life cycle as one-, two-, or three-host ticks. Tick species found in the United States are generally one- or three-host ticks. Three-host ticks feed, drop off, and reattach later to progressively larger hosts. Deer ticks are three-host ticks.

The life cycle of the deer tick comprises three growth stages: the larva, nymph and adult. In each stage, the tick infests a different host.

**Larval stage** - Tick eggs hatch into larvae in the spring. The host is a small mammal or bird. Larvae cannot transmit Lyme disease to animal or human hosts.

**Nymphal stage** - although the nymphs' preferred hosts are small

mammals (such as white-footed mice, chipmunks and squirrels) and birds, humans and their pets are suitable substitutes. Because nymphs are about the size of a poppy seed, they often go unnoticed until fully engorged, and are therefore responsible for nearly all of human Lyme disease cases.

Adult ticks actively seek new hosts throughout the fall, waiting up to 3 feet above the ground on stalks of grass or leaf tips to latch onto white-tailed deer

(the preferred host) or other larger mammals (including humans, dogs, cats, horses, and other domestic animals). Adult ticks bear their eggs while on the winter host.

The eggs drop off the deer and turn to larvae the first spring and summer. A single white-tailed deer can host enough adult ticks and provide enough blood to produce 1.5 to 3 million eggs and larvae the following spring,

Few cases of Lyme disease are acquired from adult tick bites because they are Relatively large (about the size of a seed, and attached ticks are usually

found and removed before spirochete transmission occurs (more than 36 hrs).

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