Estimating Prevalence of *Borrelia burgdorferi* Johnson in the Ticks of Otsego County, NY

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**Introduction:**

Relationships between different species in the animal kingdom often favor one species over the other. Parasitism is common place in nature (Price, 1980), and when humans interact with nature they can become parasitized. Locally, many arthropod parasites prey upon humans (Falco and Fish, 1988). These parasites are an annoyance by themselves; however, some serve as vectors for other organisms. These transmitted organisms, often microbes, can cause a number of medical problems ranging from simple irritation to paralysis and death (Cox-Singh et al., 2008).

Otsego County is home to many species of ticks, including the very common blacklegged tick, *Ixodes scapularis* Say. *I. scapularis* is the vector for *Borrelia burgdorferi* Johnson, the bacterium that causes Lyme disease. While much research has been done about Lyme's effects on humans (e.g. Falco and Fish, 1988), little research has been undertaken to document the interaction of *B. burgdorferi* with its tick host. This study will estimate the prevalence of *B. burgdorferi* in ticks caught throughout Otsego County.

**Abstract:**

Upstate New York is home to several tick species, the most common of which is the blacklegged, or deer tick, *Ixodes scapularis* Say, a common carrier of Lyme disease. While Lyme and its effects on humans are well documented, the prevalence of *Borrelia burgdorferi* Johnson- the bacterium that causes Lyme disease- within the tick population is often ignored. The aim of this study is to determine what percent of the tick population in Otsego County is infected with *B. burgdorferi*.

Collection of ticks was carried out by dragging cloth sheets in transects through tall grasses and brush at several locations in Otsego County. Collected ticks were crushed and observed via dark field light microscopy and presence or absence of *B. burgdorferi* was determined. Data recorded included tick location, sex, and presence or absence of *B. burgdorferi*. Statistical tests are to be undertaken once all data have been collected to estimate trends in *B. burgdorferi* prevalence in the tick population of Otsego County.

**Methods:**

SUNY Oneonta properties, as well as other sites throughout Otsego County were chosen to be sampled for ticks. Collection methods included dragging sheets of cloth through tall grass and brush in areas where deer frequent. Additionally, sample numbers were supplemented by donated ticks removed from pets living in Otsego County. Tick identification was performed to species and sex was recorded before the salivary glands and gut were the dissected out of the tick and prepared as a wet mount. Each slide was inspected through the use of dark field light microscopy at 800X to determine if *B. burgdorferi* was present and, if so, the relative load of the bacterium.

**Significance:**

A greater understanding of the magnitude of infection within the Otsego County tick population has the potential to provide local health officials with an indicator for the number of potential cases of Lyme in humans. Health professionals will have a better ability to inform the public to the threat and warn of the chances of encountering a tick carrying Lyme.

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**References:**

