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### Behavioral ecology of *Ixodes scapularis* and the implications for Lyme disease

The most common ticks in West Virginia include the American dog tick (*Dermacentor variabilis*), the blacklegged tick (*Ixodes scapularis*), and the brown dog tick (*Rhipicephalus sanguineus* (WVU extension)). One of the most common tick-borne diseases in WV is Lyme disease, caused by the spirochete *Borrelia burgdorferi*. *Ixodes scapularis* is a carrier for the *B burgdorferi* pathogen. Therefore, species identification is vital. The purpose of this research is to understand how tick behavior can affect the transmission and distribution of Lyme disease in the eastern United States, specifically in West Virginia. An ethogram was constructed to display five core behaviors of *Ixodes scapularis*. Other behaviors may appear in the ethogram but those remain variable across species and were not included. No other behaviors distinctive to *Ixodes scapularis* were found.

Five main behaviors were noted in *Ixodes scapularis* and can be functionally applied to other tick species. By understanding the behavior of ticks, the knowledge can be used to understand the prevalence of tick distribution in the eastern United States. When combining tick behavior and its distribution, one can then focus on the prevalence of *Borrelia burgdorferi* in infected ticks. Additionally, infected tick behavior can differ from uninfected ticks, resulting in more frequent questing and biting behaviors. Different populations of the same species can also differ in questing height and hiding behavior.