

Northeastern IPM Center Partnership Grant Impacts



Manipulation of Winter Soil Conditions as an IPM Tool for Blacklegged Tick* Control (2015–2018)

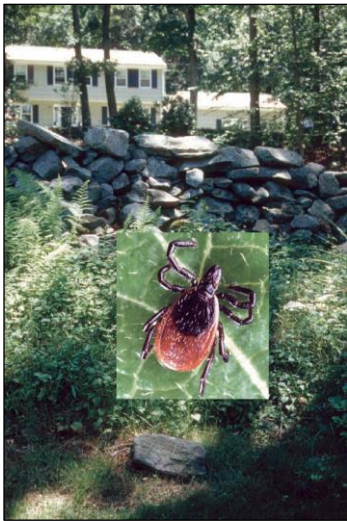
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Connecticut Agricultural Experiment Station (CAES); Maine Medical Center Research Institute (MMCRI)

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THE NEED

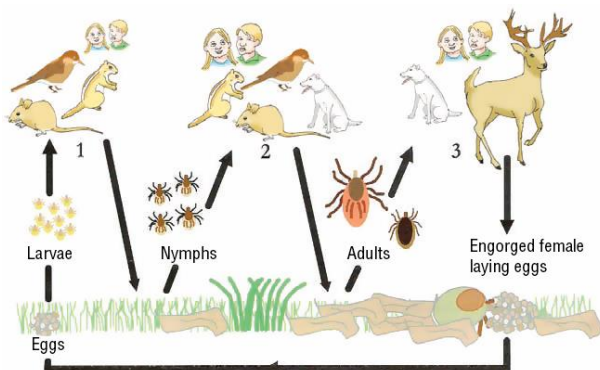
- **Blacklegged ticks (a.k.a. deer ticks)* cause more human disease than any other arthropod in the U.S.**
- Annual fluctuations in population sizes of this species, and thus, tick-borne disease risk, are poorly understood.
- This project examines whether winter soil conditions are a major influence on such annual fluctuations.



Blacklegged tick in a landscape.
Photo: Kirby Stafford (CAES)



Photo:
https://tickencounter.org/resources/tick_biteology#top



“The difficulty in managing ticks [like the blacklegged tick, *Ixodes scapularis*] lies in their multifaceted, multiyear life cycle, diverse host complex, the increasing abundance of key hosts, and a tick’s broad presence and adaptability to various habitats,” says Connecticut Chief Entomologist Kirby C. Stafford III PhD

* *Ixodes scapularis*

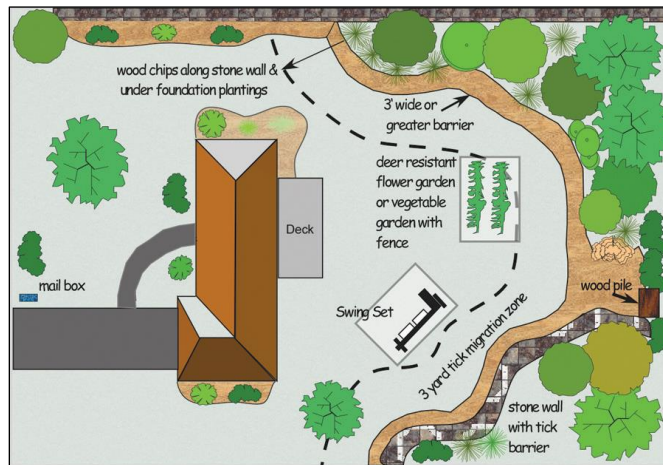
This work is supported by Crop Protection and Pest Management Program (CPPM) grant numbers 2018-70006-28882 and 2014-70006-22484 from the USDA National Institute of Food and Agriculture. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.



Expanding red rash at the site of the tick bite called primary erythema migrans (or EM). The rash serves as a clinical marker for early disease, although the presence of a rash may go unrecognized. A rash should be > 5 cm in diameter for a firm diagnosis. Photo: Lynne Rhodes (Old Saybrook, CT).

IMPACTS

- This research can be used in both small- and large-scale management of blacklegged ticks to **potentially reduce the risk and occurrence of tick-borne diseases such as Lyme.**
- Data gathered from the project will provide new and much-needed insights into the effects of climate change on arthropod vectors of disease and the impact of landscape practices on residential tick management.
- **This grant led to another grant worth \$10 million over 5 years**, which was awarded on January 1, 2017, from the CDC under the grant title “Northeast Centers of Excellence for Vector-borne Diseases.”
- The research paper [Impacts of Deciduous Leaf Litter and Snow Presence on Nymphal *Ixodes scapularis* \(Acari: Ixodidae\) Overwintering Survival in Coastal New England, USA](#), was published in *Insects*, August 16, 2019.



The use of hardscapes, mulches, and xeriscape landscaping techniques can help reduce tick habitat and isolate parts of the yard from tick hot spots. Figure: Kirby Stafford (CAES)



Yard before landscape intervention.
Photo: Kirby Stafford



Yard after landscape intervention. Photo: Kirby Stafford

WEBSITES

<https://entomologytoday.org/2017/10/20/the-current-state-of-integrated-tick-management/>
<https://portal.ct.gov/-/media/CAES/DOCUMENTS/Publications/Bulletins/b1010pdf.pdf?la=en>
https://portal.ct.gov/-/media/CAES/DOCUMENTS/Tick_Testing/CAESTickBrochurepdf.pdf?la=en
<http://neregionalvectorcenter.com/>

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