

Hello everyone,

Happy May! I hope planting is off to a good start for those in the fields. In addition to planting season, late spring also brings an abundance of ticks. I was out and about last weekend and had four on my legs. Now is the time to take precautions to avoid ticks and the diseases they harbor. I've got a couple great links for you, one from the Iowa Department of Public Health here: <https://idph.iowa.gov/cade/disease-information/lyme-disease> and another from the Iowa DNR:

<https://www.iowadnr.gov/About-DNR/DNR-News-Releases/ArticleID/221/Tips-and-Tricks-for-Avoiding-and-Removing-Ticks>. The articles below are helpful as well.

Email me with questions or comments or requests for full articles

Best regards,

Stephanie McMillan

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Range Expansion of Tick Disease Vectors in North America: Implications for Spread of Tick-Borne Disease

Sonenshine, D. E. (2018). Range expansion of tick disease vectors in North America: implications for spread of tick-borne disease. *International journal of environmental research and public health*, 15(3), 478.

Abstract: Ticks are the major vectors of most disease-causing agents to humans, companion animals and wildlife. Moreover, ticks transmit a greater variety of pathogenic agents than any other blood-feeding arthropod. Ticks have been expanding their geographic ranges in recent decades largely due to climate change. Furthermore, tick populations in many areas of their past and even newly established localities have increased in abundance. These dynamic changes present new and increasing severe public health threats to humans, livestock and companion animals in areas where they were previously unknown or were considered to be of minor importance. Here in this review, the geographic status of four representative tick species are discussed in relation to these public health concerns, namely, the American dog tick, *Dermacentor variabilis*, the lone star tick, *Amblyomma americanum*, the Gulf Coast Tick, *Amblyomma maculatum* and the black-legged tick, *Ixodes scapularis*. Both biotic and abiotic factors that may influence future range expansion and successfully colony formation in new habitats are discussed.

Advancing the Science of Tick and Tick-Borne Disease Surveillance in the United States

Wisely, S. M., & Glass, G. E. (2019). Advancing the science of tick and tick-borne disease surveillance in the United States.

Globally, vector-borne diseases are an increasing public health burden; in the United States, tick-borne diseases have tripled in the last three years. The United States Centers for Disease Control and Prevention (CDC) recognizes the need for resilience to the increasing vector-borne disease burden and has called for increased partnerships and sustained networks to identify and respond to the most pressing challenges that face vector-borne disease management, including increased surveillance. To increase applied research, develop communities of practice, and enhance workforce development, the CDC has created five regional Centers of Excellence in Vector-borne Disease.

These Centers are a partnership of public health agencies, vector control groups, academic institutions, and industries. This special issue on tick and tick-borne disease surveillance is a collection of research articles on multiple aspects of surveillance from authors that are affiliated with or funded by the CDC Centers of Excellence. This body of work illustrates a community-based system of research by which participants share common problems and use integrated methodologies to produce outputs and effect outcomes that benefit human, animal and environmental health.

Protective Effectiveness of Long-Lasting Permethrin Impregnated Clothing Against Tick Bites in an Endemic Lyme Disease Setting: A Randomized Control Trial Among Outdoor Workers

Mitchell, C., Dyer, M., Lin, F., Bowman, N., Mather, T., & Meshnick, S. (2020). Protective Effectiveness of Long-Lasting Permethrin Impregnated Clothing Against Tick Bites in an Endemic Lyme Disease Setting: A Randomized Control Trial Among Outdoor Workers. *Journal of Medical Entomology*, *Journal of medical entomology*.

Tick-borne diseases are a growing threat to public health in the United States, especially among outdoor workers who experience high occupational exposure to ticks. Long-lasting permethrin-impregnated clothing has demonstrated high initial protection against bites from blacklegged ticks, *Ixodes scapularis* Say (Acari: Ixodidae), in laboratory settings, and sustained protection against bites from the lone star tick, *Amblyomma americanum* (L.) (Acari: Ixodidae), in field tests. However, long-lasting permethrin impregnation of clothing has not been field tested among outdoor workers who are frequently exposed to blacklegged ticks. We conducted a 2-yr randomized, placebo-controlled, double-blinded trial among 82 outdoor workers in Rhode Island and southern Massachusetts. Participants in the treatment arm wore factory-impregnated permethrin clothing, and the control group wore sham-treated clothing. Outdoor working hours, tick encounters, and bites were recorded weekly to assess protective effectiveness of long-lasting permethrin-impregnated garments. Factory-impregnated clothing significantly reduced tick bites by 65% in the first study year and by 50% in the second year for a 2-yr protective effect of 58%. No significant difference in other tick bite prevention method utilization occurred between treatment and control groups, and no treatment-related adverse outcomes were reported. Factory permethrin impregnation of clothing is safe and effective for the prevention of tick bites among outdoor workers whose primary exposure is to blacklegged ticks in the northeastern United States.

Stemming the Rising Tide of Human-Biting Ticks and Tickborne Diseases, United States

Eisen, L. (2020). Stemming the Rising Tide of Human-Biting Ticks and Tickborne Diseases, United States. *Emerging Infectious Diseases*, *26*(4), 641-647.

Ticks and tickborne diseases are increasingly problematic. There have been positive developments that should result in improved strategies and better tools to suppress ticks, reduce human tick bites, and roll back tickborne diseases. However, we equally need to address the question of who is responsible for implementing the solutions. The current model of individual responsibility for tick control evolved from a scenario in the 1990s focusing strongly on exposure to blacklegged ticks and Lyme disease spirochetes in peridomestic settings of the

northeastern United States. Today, the threat posed by human biting ticks is more widespread across the eastern United States, increasingly complex (multiple tick species and >10 notable tickborne pathogens), and, across tick species, more spatially diffuse (including backyards, neighborhood green spaces, and public recreation areas). To mitigate tick-associated negative societal effects, we must consider shifting the responsibility for tick control to include both individual persons and professionally staffed tick-management programs.