

Multiflora rose amplifies the prevalence of Lyme disease pathogen, but not necessarily Lyme risk

February 19 2018, by Talia Ogliore



East Coast forest sites overtaken by invasive multiflora rose (a), and without rose (b). Credit: Washington University, University of Delaware

When it comes to avoiding Lyme disease, know your forest.

That's the cautionary tale from a new study in the journal *Parasites & Vectors*, which found that ticks in urban parks in Delaware dominated by an invasive rose bush were nearly twice as likely to be infected with *Borrelia burgdorferi*, the bacteria that causes Lyme [disease](#), as compared to ticks from uninvaded [forest](#) fragments.

But outdoor enthusiasts can't dodge disease just by staying away from thick stands of invasive plants within forest areas. The trend reverses itself at a broader scale, when you compare invaded forests to those that are dominated by mature trees.

"While rose appears to increase *B. burgdorferi* transmission by bringing together ticks and infectious host animals, this is not the whole story," said Tyson Research Center staff scientist Solny Adalsteinsson, who conducted the research in New Castle County, Delaware. That state has one of the nation's highest rates of Lyme disease per capita.

Instead, Adalsteinsson said, there are far more ticks tramping around in forests without the invasive rose, *Rosa multiflora*.



Black-legged tick. Credit: Shutterstock

The difference can likely be explained by the amount of leaf litter on the ground. Ticks live for up to two years, and they need places to hide when they're not actively slurping down their blood meals. Forests with mature trees, aged more than 100 years, tend to have thick layers of fallen leaves on the ground, but the soil is bare in many younger forest fragments that are choked with invasive bushes.

This research is focused on East Coast forests, and particularly on Lyme disease, which is not currently considered a major threat in Missouri. However, Lyme disease is the fastest-growing vector-borne disease in the United States, according to the Centers for Disease Control and Prevention.

Adalsteinsson's research findings may have applications for park managers and recreationists wherever they reside.

When spending time outdoors, learn to recognize the conditions that make for good [tick](#) habitat—including bushy, invasive undergrowth that could provide hiding places for mice, birds and other tick hosts. Those thickets could be local hot spots for disease. But also know that a rich leaf layer on the forest floor is a welcome mat for ticks—infected and not.

"Because there are so many more ticks in the uninvaded forest, even though the ticks are less likely to be carrying a pathogen, your overall chance of encountering an infected tick is going to be greater in an uninvaded forest fragment," Adalsteinsson said. "It's a sheer numbers game at that point."

More information: Solny A. Adalsteinsson et al. Multiflora rose invasion amplifies prevalence of Lyme disease pathogen, but not necessarily Lyme disease risk, *Parasites & Vectors* (2018). [DOI: 10.1186/s13071-018-2623-0](https://doi.org/10.1186/s13071-018-2623-0)

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