

# 2021 Maine Forest Tick Survey Results Now Available

By Elissa Ballman

The 2021 Maine Forest Tick Survey at the University of Maine marked the second year of a multiyear,



Photo: University of Maine

Blacklegged ticks at various life stages.

before. The link to the survey results are located at [www.mainewoodlandowners.org/forest-pests-disease#tick](http://www.mainewoodlandowners.org/forest-pests-disease#tick).

In both the 2020 and 2021 surveys, the collection period was in July, which marks the peak population size of blacklegged tick nymphs in Maine. The nymph stage is considered most hazardous to human health because they are small and difficult to notice, and have already had one blood meal where they may have acquired a pathogen from a vertebrate host. Tick densities can naturally fluctuate from year to year, and so it's important to collect data across multiple years.

For the 2021 survey, 150 volunteers across nine southern and coastal Maine counties collected 5,238 ticks — 2,341 blacklegged ticks, 2,872 dog ticks and 70 rabbit ticks. That's an average of 14.2 blacklegged tick nymphs per property, up from the 2020 survey where 3.7 blacklegged tick nymphs were collected per property. Summer 2021 was much wetter and cooler compared to 2020, which researchers say may be why more ticks were collected in the second year.

Collecting ticks over two summers provides a picture of how certain forest management practices influence tick populations. The survey also revealed patterns in the distribution of ticks in the forest landscape. Properties that had timber harvests in the past 15 years had significantly fewer blacklegged tick nymphs than those that have not been harvested in 20 or more years. Properties with invasive plants had significantly more blacklegged tick nymphs than properties without, particularly those with barberry and honeysuckle.

The researchers tested 2,107 blacklegged tick nymphs

multidisciplinary study examining the link between forest land management and blacklegged (deer) ticks. According to the latest results, nine southern and coastal Maine counties had a three-fold increase in the ticks in 2021 compared to the same time the year

for pathogens. Of the tested nymphs, 24.3% were carrying *Borrelia burgdorferi*, the bacterium responsible for Lyme disease in humans; 5.8% were carrying *Anaplasma phagocytophilum*, the bacterium responsible for human granulocytic anaplasmosis; and 5.8% carried *Babesia microti*, the organism responsible for human babesiosis. All three pathogens were found in all nine counties surveyed, but the highest concentration of *B. burgdorferi* infected ticks were in Knox, Lincoln and York County. Meanwhile, *A. phagocytophilum* was most prevalent in Cumberland and Lincoln County, and *B. microti* in Lincoln County.

These findings complement a growing body of literature that suggests that land management history can dramatically alter the distribution and infection prevalence of disease vector tick species," said Allison Gardner, assistant professor of arthropod vector biology and principal investigator of the study.



Photo: University of Maine

150 volunteers collected ticks across nine counties in 2021.

The survey volunteers also collected 455 non-tick arthropods. The researchers published the data from these results to know better which insects are commonly mistaken for ticks, like spiders, mites, aphids and immature stink bugs.

The study will not be repeated in 2022, but may be replicated in the future.

"The efforts of our community science volunteers enable data collection under a variety of forest conditions at unprecedented spatial scales," Gardner says. "As the blacklegged tick and the pathogens it transmits continue to spread throughout the state, we hope to leverage these findings to develop practical recommendations for area-wide reduction of tick densities."

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