

# Fighting the bite: protecting public health by investigating the increase of Lyme disease cases and the expanding range of blacklegged ticks in Ohio



CONTRIBUTOR: *Kristen Dickerson, PhD, MSN, MPH, RN, MLT (ASCP), State Epidemiologist, Ohio Department of Health*

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The Ohio Department of Health (ODH) hired a Lyme disease epidemiology intern to assist with Lyme disease case investigations, communicate with healthcare providers, and support local health departments. ODH also established a more standardized and widespread tick surveillance network among local health departments throughout the state and contracted with Ohio State University to increase timely testing of blacklegged ticks for several diseases of public health importance.

## The “What”

Given the precipitous increase in the blacklegged tick population in Ohio, the increase in Lyme disease is of little surprise. Since the first discovery of established blacklegged ticks (*Ixodes scapularis*) in Ohio in 2010, Lyme disease has rapidly become the most prevalent tickborne disease in the state, causing significant disease among Ohioans.

By 2013, 3 years after its discovery in Ohio, 34 of 88 counties (39%) were identified to have established blacklegged tick populations. By 2023, 68% of Ohio counties had established populations with only 6 counties remaining where blacklegged ticks have yet to be reported.

In 2022, the Ohio Department of Health (ODH) received 3,372 laboratory reports of individual

patients tested for Lyme disease. With many local health departments (LHDs) understaffed, Lyme disease reports were often unable to be investigated due to resource constraints, prioritization of public health efforts, and the dramatic and rapid increase of reports which coincided with the COVID-19 pandemic. With hundreds of suspected Lyme disease cases left unconfirmed and the true prevalence of the disease likely being underreported, ODH hired a Lyme disease epidemiology intern to assist with investigative follow-up on behalf of LHDs. The intern communicated directly with healthcare providers to obtain medical records and inform a complete clinical and laboratory picture for these Lyme disease reports. While Epidemiology and Laboratory Capacity for the Prevention and Control of Emerging Infectious Diseases (ELC) Vector-borne Diseases funds were not available to directly hire a Lyme disease epidemiology intern, they did support full time positions and vector testing, which provided the flexibility to use other funding sources to hire the intern.

To identify the blacklegged ticks' expanding range more accurately in Ohio, ODH created a standardized method for tick surveillance following the surveillance methods and objectives in the Centers for Disease Control and Prevention: Surveillance for *Ixodes scapularis* and pathogens found in this tick species in the United States guidance document. Starting in 2023, ODH contracted with the Ohio State University Infectious Diseases Institute Applied Microbiology Services Laboratory (OSU IDI AMSL). This contract was created to facilitate the timely testing of blacklegged ticks for several diseases of public health importance, including Lyme disease.



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## The “So What”

The addition of the Lyme disease epidemiology intern was critical to the success of Ohio’s Lyme disease reporting in 2022 and into 2023. As of March 6, 2023, ODH was able to follow up on an additional 379 individuals with laboratory reports for Lyme disease. Of those, an additional 63 cases had additional diagnostics or clinical history criteria to meet the probable or

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confirmed case definition. Thanks to the intern’s investigative work, these 63 cases accounted for 11% of Ohio’s 2022’s Lyme disease cases.

As a result of the contract with OSU IDI ASML, there has been a considerable decrease in the turn-around time for pathogens results, allowing ODH to provide timely guidance to inform surveillance efforts and public health action throughout the state. As a result of the testing over previous years and the new testing opportunity with OSU IDI ASML, *Borrelia burgdorferi* has been detected in 24 of 88 Ohio counties (27%) in unfed host-seeking ticks.

ODH has been able to aid LHDs to increase tick surveillance across the state. Prior to 2022, LHDs conducted standardized active tick surveillance. Since then, tick flags and surveillance supplies have been sent to 22 LHDs. Of those that have received supplies, 11 of them have begun submitting ticks to ODH for testing and data collection. By employing this standardized method, changes in the distribution and abundance of ticks as well as the prevalence of tickborne diseases, like Lyme disease, allow ODH to provide actionable, evidence-based information to public health partners, healthcare providers, and the general public.

## The “Now What”

Moving forward, staff dedicated to addressing the current gaps in Lyme disease reporting and public health entomology will be critical. Currently, the Lyme disease epidemiology intern position is temporary; however, ODH hopes to use ELC funding to continue staffing intern positions to address the growing threat of Lyme disease by providing assistance to LHDs and supporting timely and complete reporting on behalf of Ohio. The rise in Lyme cases and need for a designated position would not have been evident a decade ago; flexible funding would ensure that Ohio is poised to respond to any current and future emerging health threats.

Funding is vital for the partnership with OSU IDI ASML.

While ODH will be renewing the contract with OSU IDI ASML for the next fiscal year, future years will be dependent on federal and state support.

The blacklegged tick is established in much of Ohio and the threat of Lyme disease is here to stay. As such, staff capacity and response priorities must be adjusted to provide actionable and sustainable solutions to this preventable disease. With the threat of increasing Lyme disease cases, public and patient awareness and education is essential to preventing further morbidity. Accurate information regarding the burden of Lyme disease and the distribution of the blacklegged tick helps providers make informed clinical decisions and recommendations to help the general public take appropriate preventive actions to reduce their risk.

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Key contributors to this project Richard Gary, State Public Health Entomologist; Lynn Denny, Epidemiologist III; Leeanne Garrett, Public Health Entomologist; Colleen McEnhill, college intern.