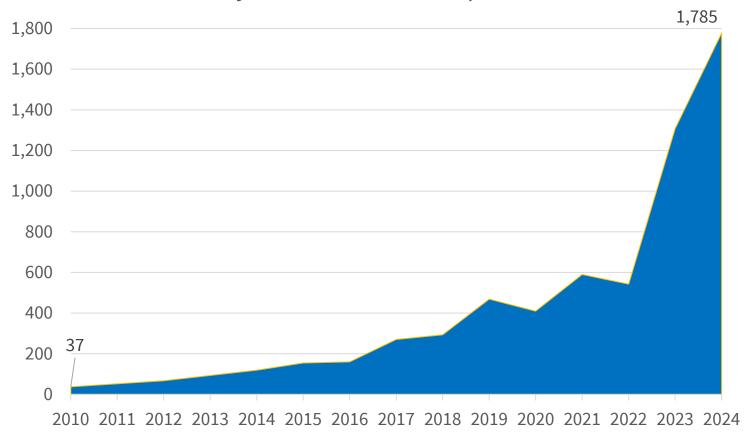
Lyme on the Rise: Understanding and Responding to Increasing Risk in Ohio

Richard Gary, PhD Julie Chaya, PhD, MEd, MA

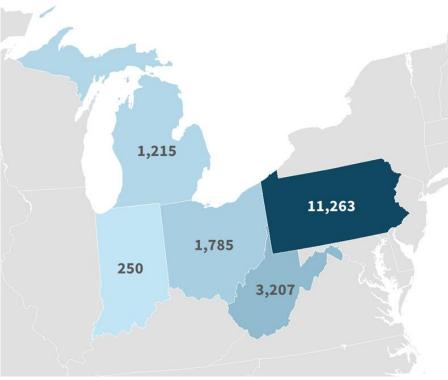


Lyme Disease Trends in Ohio

Over the past 14 years, there has been a **48-fold** increase in Lyme disease cases reported in Ohio.



Lyme disease in Ohio and surrounding states, 2024

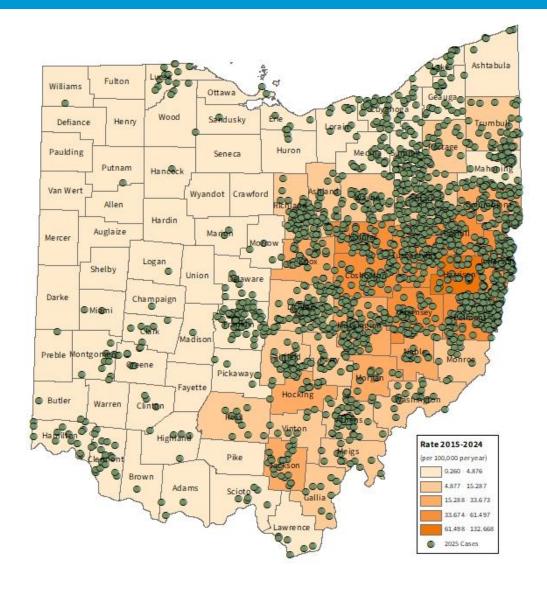


Department of

Source: Ind., Mi., Oh., Pa., and W.V. Departments of Health.



Lyme Disease Trends in Ohio



2025 Cases* (green dots)
compared to
2015-2024 Incidence
(orange shading)

* Cases as of Sep. 15, 2025: **1,977**



Blacklegged Tick in Ohio in 2003



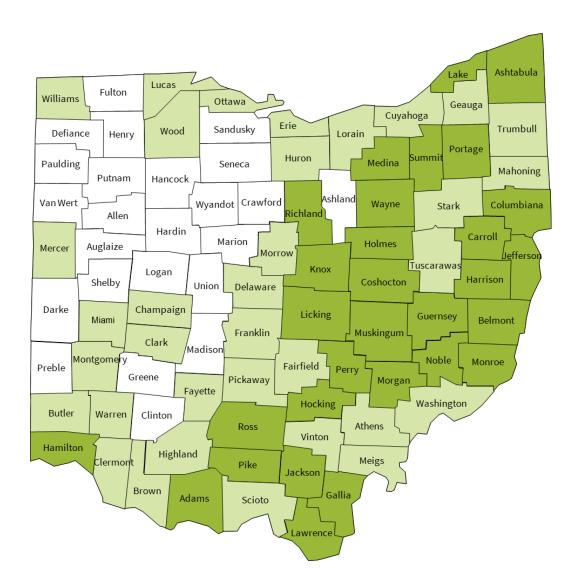


- No Record (no ticks identified to date) = 65 counties.
- Reported (one to five ticks identified in the same year) = 23 counties.
- **Established** (six or more ticks identified in the same year) = **No counties**.



Blacklegged Tick in Ohio in 2013





- No Record (no ticks identified to date) = 24 counties.
- Reported (one to five ticks identified in the same year) = 34 counties.
- **Established** (six or more ticks identified in the same year) = **30 counties**.



Blacklegged Tick in Ohio in 2025



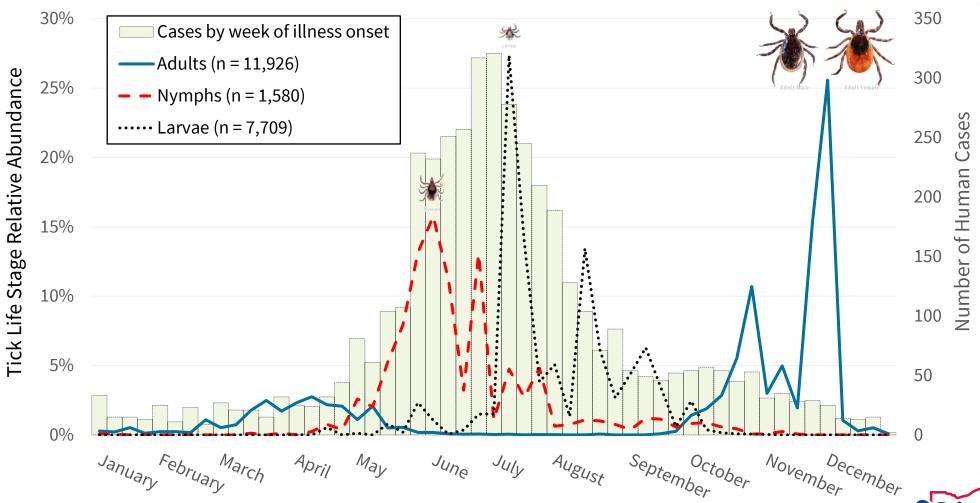


- No Record (no ticks identified to date) = zero counties.
- Reported (one to five ticks identified in the same year) = 11 counties.
- **Established** (six or more ticks identified in the same year) = **77 counties**.



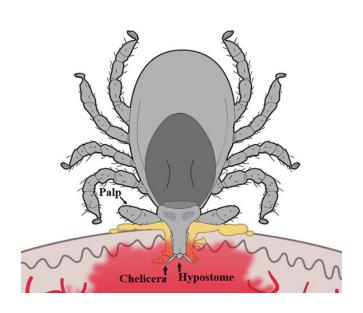
Tracking the Tick: Linking Life Stage Abundance to Lyme Disease Risk







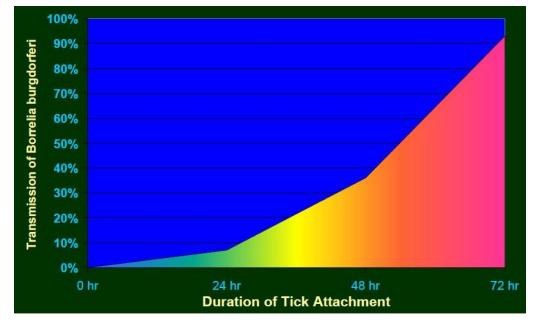
Attachment, Feeding, and Risk of Pathogen Transmission













Environmental Drivers

- Climate Change.
- Suburban Sprawl.
- Deer Populations.

OUTDOORS

Ohio's problem: Too too many deer, but not enough hunting to control the population

Dave Golowenski Special to The Columbus Dispatch

Sept. 24, 2023 Updated Sept. 26, 2023, 10:17 a.m. ET







Lyme Disease

Early Signs and Symptoms (three to 30 days post tick bite)





Lyme Disease

Late Signs and Symptoms (Days to Months post tick bite)

- Severe headaches and neck stiffness.
- Additional EM rashes on other areas of the body.
- Facial palsy.
- Arthritis with severe joint pain and swelling, particularly the knees and other large joints.
- Intermittent pain in tendons, muscles, joints, and bones.
- Heart palpitations or an irregular heartbeat (<u>Lyme carditis</u>).
- Episodes of dizziness or shortness of breath.
- Inflammation of the brain and spinal cord.
- Nerve pain.
- Shooting pains, numbness, or tingling in the hands or feet.







Tickborne Co-Infections



- Anaplasmosis is most common nationally.
 - Occurs in up to 10% of patients with Lyme disease.
- Other co-infections including, babesiosis, Powassan virus disease, and hard tick relapsing fever, occur less frequently.



- Of 1,083 Ohio Blacklegged ticks infected with *Borrelia burgdorferi*:
 - Co-infected with Anaplasma phagocytophilum: 36.
 - Co-infected with Borrelia miyamotoi: eight.
- Other pathogens detected in Ohio blacklegged ticks:
 - o Babesia microti.
 - o Babesia odocoilei.



Diagnostic and Reporting Challenges

Diagnostic

Reporting

- Nonspecific early symptoms.
- EM not always present or recognized.
- Serologic testing limitations.
- Overlap with other
 diseases.

- Variable provider experience.
- Case definition complexity and changes over time.
- Disparity between reported and actual cases.

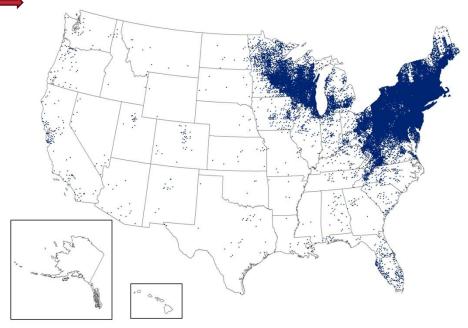
- Underreporting by providers.
- Geographic variation in reporting structure.
- Lag in surveillance data.



Public Health Burden in the U.S.

Estimated 89,000 cases reported annually —
large underreporting gap.

- Estimated 476,000 people diagnosed and treated annually.
- Estimated costs: \$345 million to \$968 million.
- Highest burden in Northeast, mid-Atlantic, upper-Midwest.
- Untreated cases can lead to heart, joint, and nervous system complications.



Map of the United States showing reported cases of Lyme disease in 2023. One dot placed in county of residence for each reported case.



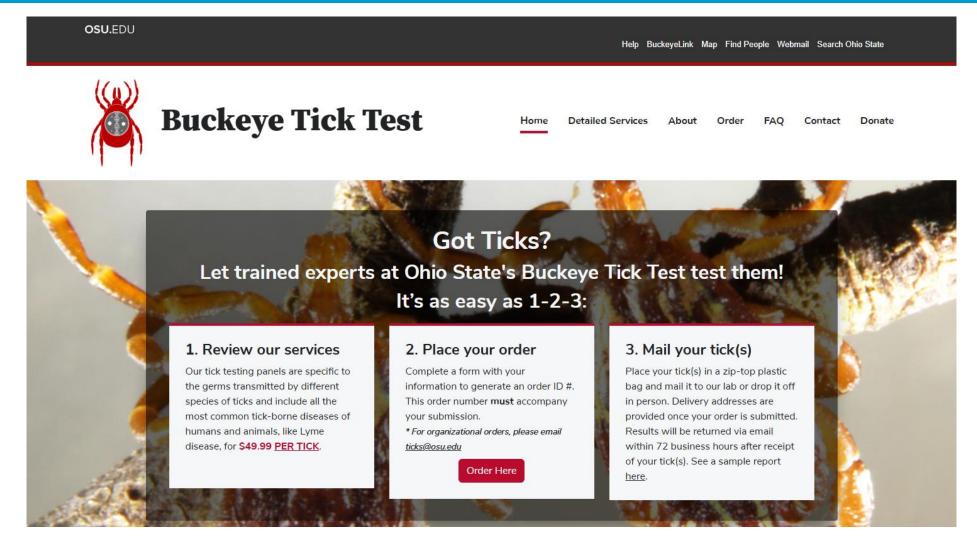
A Note About Tick Testing

The CDC does <u>not</u> recommend testing ticks for diagnostic purposes:

- Results may not be reliable.
 - Variable laboratory standards.
- Positive results can be misleading.
 - Positive tick may not infect person.
- Negative results can also be misleading.
 - Person might have been infected by another tick.



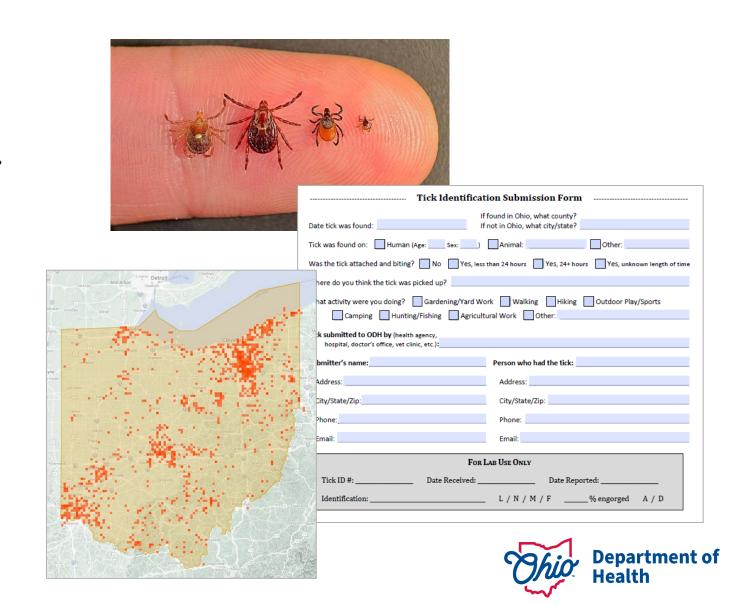
A Note About Tick Testing





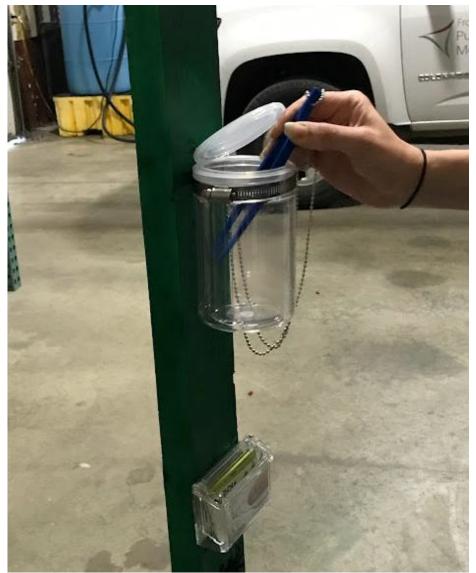
Passive Tick Surveillance

- The Ohio Department of Health (ODH) has provided free tick identification for several decades.
- Local health agencies, doctors, veterinarians, and residents can mail ticks or email photos for identification year-round.
- Other sources of data include university research and citizen science projects.



Passive Tick Surveillance





Active Tick Surveillance

- In 2019, ODH began collecting ticks according to the Centers for Disease Control and Prevention (CDC) protocol.
- A one-meter-square piece of white cloth is slowly dragged along the ground and over vegetation to collect host-seeking ticks from the environment.
- Ticks are identified to species and tested for bacterial pathogens.



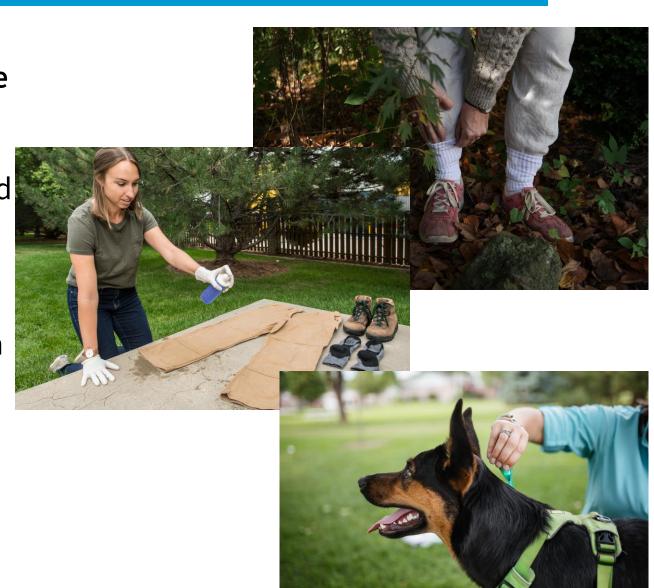
Personal Protection

 Personal protection is the most effective method for preventing tick bites.

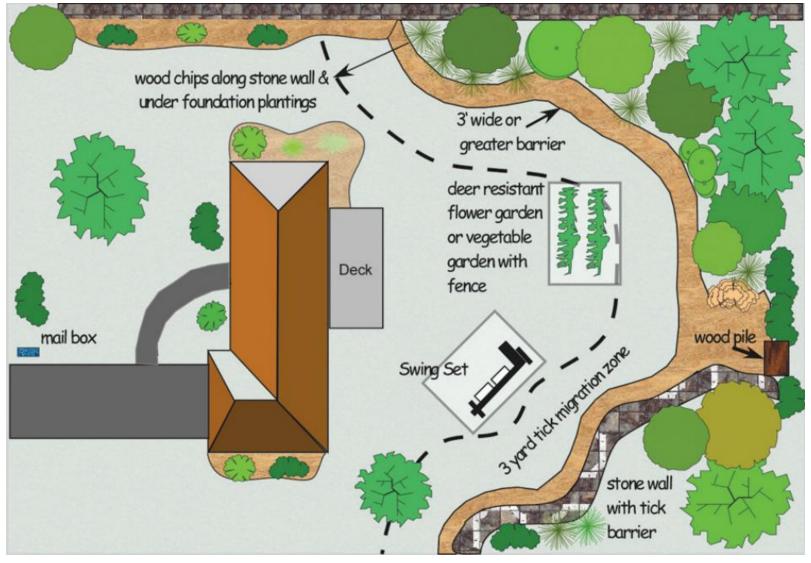
 Wear light-colored clothing, long-sleeved shirts tucked into pants, and long pants tucked into socks.

• Treat clothing and gear with **permethrin** or purchase pre-treated clothing.

Apply repellents registered by the U.S.
 Environmental Protection Agency (EPA),
 such as DEET or picaridin.



Landscape Management





Ohio Department of Health Resources

- Printed educational materials.
- Tick identification submission kits.











Ohio Department of Health Resources

Zoonotic Disease Program

odh.ohio.gov/zdp

Ticks in Ohio

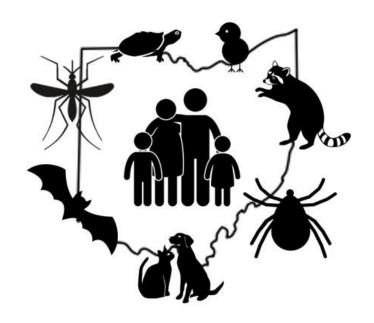
odh.ohio.gov/ticks

Lyme Disease in Ohio

odh.ohio.gov/Lyme

Zoonotic Disease Program Newsletters

odh.ohio.gov/ZDP-Newsletters





One action I will take when I return to my jurisdiction is...

- Partner with a new sector (schools, parks, primary care).
- Review staffing/budget for Lyme response priorities.
- Share a clear Lyme prevention message with the public this season.
- Provide local clinicians with reporting/diagnosis updates.
- Use state tick or case data in local reports.
- Put Lyme on the agenda at the next board/commissioner meeting.
- Confirm staff know state contacts for rapid consultation.
- Tailor outreach for rural vs. suburban populations.



Thank you!

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Department of Health