



State of Illinois
Illinois Department of Public Health

Lyme Disease Prevention and Protection Act Status

**Division of Environmental Health Vector Control Program
and
Communicable Disease Control Section Vector-Borne Diseases
Program**

June 28, 2022



Background

PUBLIC HEALTH

(410 ILCS 450/) Lyme Disease Prevention and Protection Act.

The Lyme Disease Prevention and Protection Act, also known as the Lauryn Russell Lyme Disease Prevention and Protection Law, went into effect January 1, 2019. The act provided a background on Lyme disease and called for the creation of the Lyme Disease Prevention, Detection, and Outreach Program, and the Lyme Disease Task Force.

Lyme Disease Prevention, Detection, and Outreach Program

(410 ILCS 450/10) Sec. 10. Lyme Disease Prevention, Detection, and Outreach Program.

The act states that:

The Department of Public Health shall establish a Lyme Disease Prevention, Detection, and Outreach Program. The Department shall continue to study the population of ticks carrying Lyme disease and the number of people infected in Illinois to provide data to the public on the incidence of acute Lyme disease and locations of exposure in Illinois by county. The Department shall partner with the University of Illinois to publish tick identification and testing data on the Department's website and work to expand testing to areas where new human cases are identified. The Department of Public Health shall establish a Lyme Disease Prevention, Detection, and Outreach Program. The Department shall require health care professionals and laboratories to report acute Lyme disease cases within the time frame required under the Control of Communicable Diseases Code to the local health department. To coordinate this program, the Department shall continue to support a vector-borne disease epidemiologist coordinator who is responsible for overseeing the program. The Department shall train local health departments to respond to inquiries from the public.

The Illinois Department of Public Health's Division of Environmental Health (IDPH EH) Vector Surveillance and Control Program (Vector Program) and the Communicable Disease Control Section (CDCS) Vector-Borne Diseases (VBDs) Program have addressed this directive by conducting the following programmatic activities.

1) Illinois Active Tick Surveillance Program

Prior to 2018, the Vector Program primarily conducted tick surveillance through a passive program (*i.e.*, local health departments, clinicians, and citizens could submit ticks to the Vector Program for identification). Although this information is beneficial, it does not provide the geographic specificity or granularity of active tick surveillance data needed to direct public health action. In 2019, the Vector Program developed an active tick surveillance program, which aims to monitor tick presence, abundance, and infection prevalence in medically important ticks to direct public health action and to educate citizens and clinicians of local risks.

The active tick surveillance program began with an intergovernmental agreement (IGA) between the Vector Program and the University of Illinois (U of I) Natural History Survey Medical Entomology Laboratory (INHS MEL). The purpose of the IGA is to conduct targeted tick

surveillance in areas of disease foci or outbreak locations, establish sentinel sites for recurring tick surveillance over time, and collect, identify, and test ticks for pathogens of public health concern.

The Vector Program developed a system for selecting counties for active tick surveillance based on the Centers for Disease Control and Prevention (CDC) Tick Surveillance Objectives outlined in its 2019 *Surveillance for Ixodes scapularis and pathogens in this tick species in the United States* publication. The first two objectives are outlined below and must be met before moving onto other objectives:

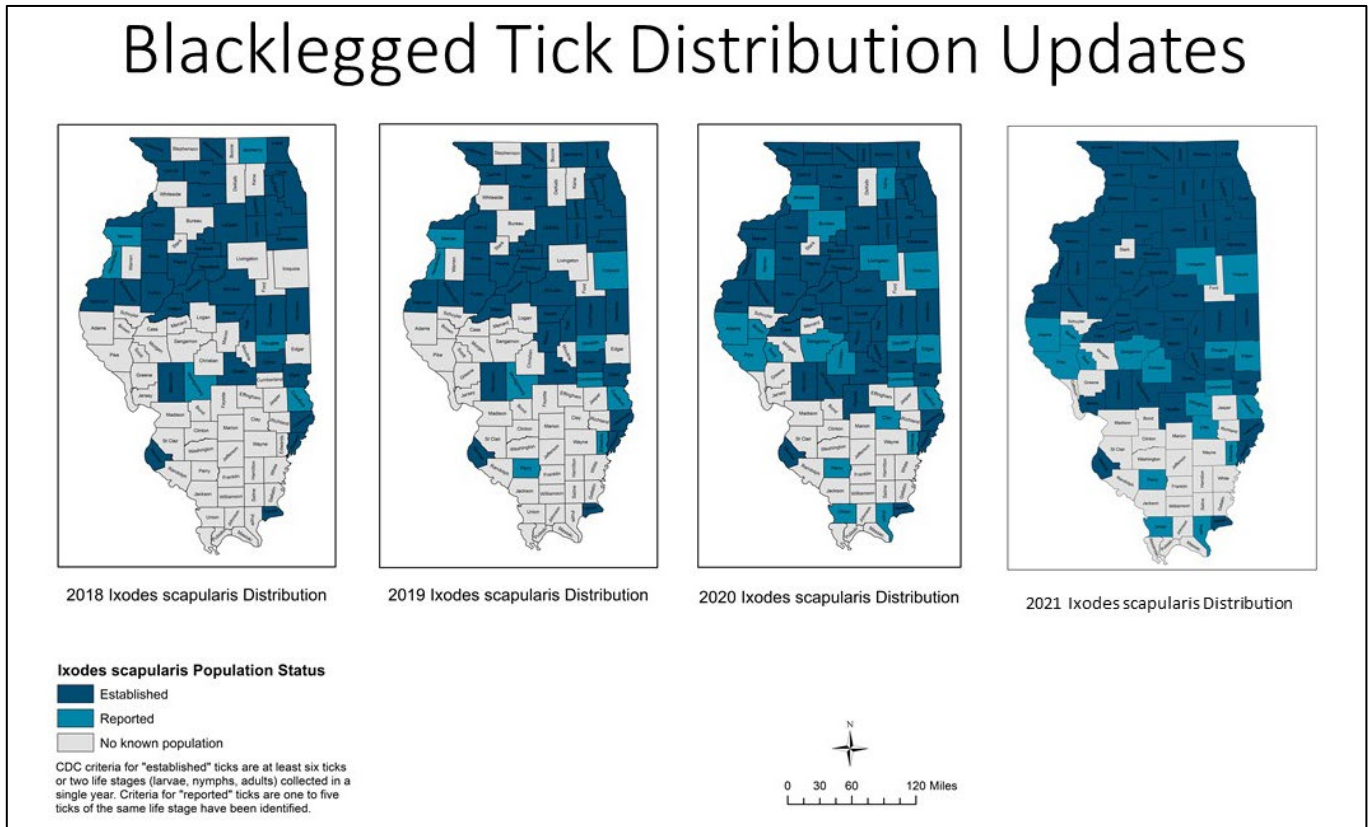
- Classify county status for *I. scapularis*: established, reported, or no data available.
- Classify county status for presence of specific pathogens in *I. scapularis* ticks: present or no data available.

In addition to these county statuses for *Ixodes scapularis* and *Borrelia burgdorferi* (the causative agent of Lyme disease), the Vector Program also incorporated the five-year human Lyme disease incidence for each county and prioritizes counties that have high numbers of Lyme disease incidence.

The Vector Program coordinates with the INHS MEL each season to reexamine priority counties for surveillance to ensure the most up to date data is utilized for county selection. The INHS MEL then conducts active tick surveillance in the IDPH recommended counties and identifies and tests those ticks for pathogens of public health importance.

The first goal of the active tick surveillance program is to determine what counties have *Ixodes scapularis* present. For a county to be established, six or more ticks of the same life stage must be found in a 12-month period, or two or more life stages must be found in a 12-month period. For a county to be reported, less than six ticks of the same life stage must be found within a 12-month period. In 2018, Illinois had 37 established counties, six reported counties and 59 counties with no data available. After the 2021 active tick surveillance season, Illinois had 56 established counties, 18 reported counties, and 28 counties with no data available. **Figure 1** illustrates the progress of the active tick surveillance program in county status over the past three years. A current distribution map is also included in **Attachment 1**.

Figure 1: County status for *I. scapularis* in Illinois



The second goal of the Vector Program’s active tick surveillance is to determine what counties have pathogens of public health concern, specifically *Borrelia burgdorferi* for the purpose of the act. Prior to 2018, limited research had been done in Illinois to define counties with *B. burgdorferi* presence. As of 2021, the active tick surveillance program has identified *B. burgdorferi* from *I. scapularis* ticks collected from 36 counties (**Attachment 2**).

Additionally, the Vector Program is not limited to *Ixodes scapularis* surveillance alone. **Tables 1** outlines the ticks that have been collected by the INHS MEL through this active tick surveillance program IGA with the Vector Program.

Table 1. Ticks Collected through Active Tick Surveillance

Tick Species	2019	2020	2021*
<i>Ixodes scapularis</i>	881	340	693
<i>Amblyomma americanum</i>	2,254	1,468	676
<i>Amblyomma maculatum</i>	6	774	97
<i>Dermacentor variabilis</i>	135	2,285	975

*Ticks from the 2021 surveillance season may still be in processing

In March 2020, the Vector Program arranged through its IGA with the INHS MEL for two INHS MEL staff members to travel to CDC Fort Collins, Colorado for tick molecular testing training. The

INHS MEL is the only lab in Illinois to have been trained in tick molecular testing by the CDC. The INHS MEL’s testing criteria align with the testing requirements of CDC. **Table 2** outlines pathogen testing conducted by INHS MEL as part of the IGA with the Vector Program.

Table 2. Tick Pathogen Detection Status

Pathogen	Tested	Positive
<i>Anaplasma phagocytophilum</i>	1,687	53
<i>Babesia microti</i>	1,689	11
<i>Borrelia burgdorferi</i>	1,667	351
<i>Borrelia mayonii</i>	1,033	0
<i>Borrelia miyamotoi</i>	1,664	37
<i>Ehrlichia chaffeensis</i>	2,100	24
<i>Ehrlichia ewingii</i>	2,366	42
<i>Ehrlichia muris eauclairensis</i>	791	0
<i>Francisella tularensis</i>	701	6
<i>Rickettsia parkeri</i>	4,670	147
<i>Rickettsia rickettsii</i>	4,048	1
<i>Heartland virus</i>	1,165	2 pools*

*Heartland virus was tested by the CDC and ticks were tested in pools rather than individuals

2) Program Funding

The IDPH EH active tick surveillance program initiative is primarily funded through the Used Tire Fund (Illinois State Special Fund 294). The Vector Program entered into a three-year IGA (IDPH contract #153000021) with INHS MEL July 1, 2020, with an end date of June 30, 2023. The INHS MEL receives \$200,000 each state fiscal year for a total of \$600,000 to conduct active tick surveillance activities in Illinois.

Additionally, in FY22, the Vector Program was awarded \$65,000 through the CDC Epidemiology and Laboratory Capacity (ELC) Budget Period 3 funding to enhance the active tick surveillance program. The ELC funding was provided through an intergovernmental agreement to the INHS MEL in November 2022. This increased the three-year IGA amount to \$665,000 as of June 2022.

In May 2022, the Vector Program applied for CDC ELC Budget Period 4 funding for active tick surveillance and will be notified of a potential award in August 2022.

The Vector Program distributes Vector Surveillance and Control Grants to 97 local health departments through the Comprehensive Health Protection Grant bundle. The vector grants are funded through the Emergency Public Health Fund (Illinois State Special Fund 240). Below are the past five-year funding awards:

- Fiscal Year 2019: \$2.8 million
- Fiscal Year 2020: \$2.8 million
- Fiscal Year 2021: \$2.8 million
- Fiscal Year 2022: \$2.2 million
- Fiscal Year 2023: \$2.5 million

The Vector Surveillance and Control Grants are used primarily to fund West Nile virus surveillance and prevention as specified in the statute (415 ILCS 5/55.6a). However, certified local health departments may utilize up to 20% of their grant award for non-mosquito vectors.

3) Tickborne Disease Incidence Maps

Average 10-year tickborne disease human incidence was calculated by county for the years 2010-2019. Cases were counted based on county of residence at the time of symptom onset. All probable and confirmed cases for each disease were included. Case definitions were based on the recommended CDC and Council of State and Territorial Epidemiologists (CSTE) case definition for the year of symptom onset. The 10-year tickborne disease incidence maps were created by the Vector Program using ESRI ArcGIS software.

Ten-year Tickborne Disease Incidence maps were added Oct. 29, 2021 to the [IDPH website](#). These maps are also included in this document (**Attachment 3**).

4) Illinois Active Tick Surveillance Mapping Application [<https://arcg.is/15fDSO>]

The Vector Program created an interactive tick mapping application to report the surveillance findings from the active tick surveillance program. The mapping application was created and is maintained by the Vector Program through ESRI ArcGIS software.

The Illinois Tick Surveillance Mapping Application is divided into tabs for each of the four ticks of public health importance: blacklegged tick, Lone Star tick, Gulf Coast tick, and American dog tick. In each individual tick species' tab are additional tabs showing the current tick's distribution map in Illinois, along with any pathogens that have been tested for in that tick. Counties on the map may be selected to see a detailed description of ticks collected and tested in that county.

The Illinois Tick Surveillance Mapping Application is updated at a minimum of twice a year when the INHS MEL sends the Vector Program its IGA reporting deliverable of a six-month report. It is also updated more frequently if data is available.

5) Data Reporting

Tick collection, identification, and pathogen testing data are displayed on the interactive Illinois Active Tick Surveillance Mapping application. Additionally, data are reported to the CDC through the ArboNET data reporting platform.

6) Educational Outreach

Trainings

In state fiscal year 2019, the Vector Program entered into an IGA with the University of Illinois to "provide educational opportunities for certified local health departments in Illinois. Trainings shall include in-person and web-based events and the educational subject matter shall cover tick dragging and flagging, tick identification, and active tick surveillance safety guidelines....at least one in-person training shall occur for local health department staff in each of the six IDPH regions." Training dates and locations are listed here:

1. April 4, 2019—Tazewell County Health Department
2. April 5, 2019—Jackson County Health Department
3. April 12, 2019—Madison County Health Department
4. April 19, 2019—Winnebago County Health Department
5. April 26, 2019—Champaign-Urbana Public Health District
6. May 3, 2019—Kendall County Health Department

A total of 44 counties participated (**Figure 2**) in these trainings with 81 participants in total.

On June 25, 2019, the Vector Program and IDPH Communicable Disease Vector Program gave a joint presentation at the 2019 Public Health and Health Care Coalition Preparedness Summit. Below is the abstract of the presentation.

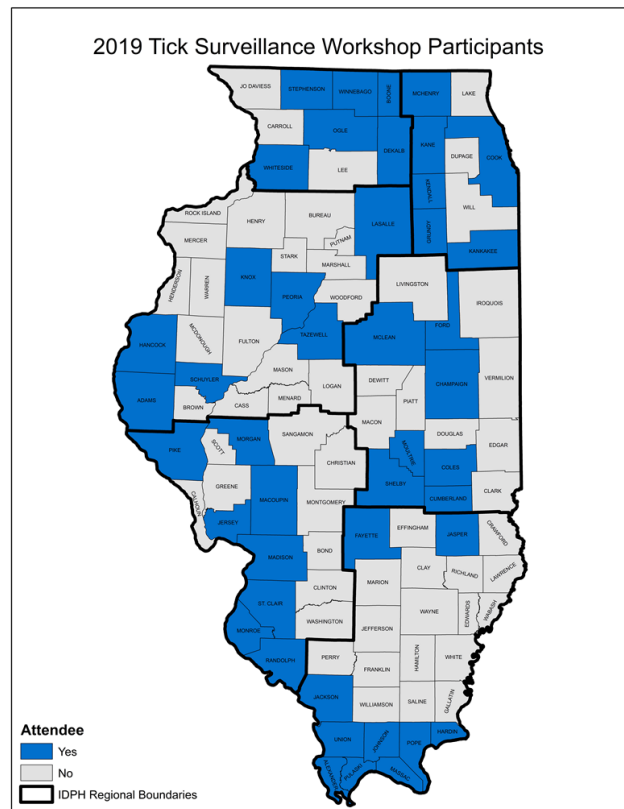


Figure 2: 2019 Tick Training Workshops

Tick-Tock: Time for a Tick Talk

Bone Student Center - 3 East Lounge

As small as poppy seeds, ticks can easily go unnoticed. Their presence, however, represents an increasing threat to public health. This presentation will explore known tick species of Illinois, tick niches and their connection to human activities, and the vector capacity of each tick species for disease transmission. Emphasis will be placed on control and prevention techniques for high risk areas. Finally, the potential for novel tickborne disease establishment, invasive tick species introduction, and tick surveillance response in Illinois will be examined.

Samantha Debosik, MS

Judy Kauerauf, MPH

April Holmes, MPH

On March 25, 2021, the Vector Program and the INHS MEL provided a joint presentation to the Illinois Department of Natural Resources (IDNR). This presentation provided IDNR staff with an update on ticks and pathogens located in Illinois and explained efforts in active tick surveillance that were happening in and around state parks.

Illinois State Fair

The Vector Program was present at both the 2019 and 2021 Illinois State Fairs in Conservation World. A booth was set up to provide educational materials to the public on both ticks and mosquitoes (**Figure 3**). Fair goers had the opportunity to ask questions of Vector Program staff and learn about efforts in Illinois to discover what tick species are present and what pathogens they are carrying. Educational materials and mosquito / tick repellent wipes were available for guests. The Vector Program intends to continue educational efforts at the 2022 Illinois State Fair.



Figure 3: Vector Program State Fair Educational Booth

Illinois Mosquito and Vector Control Association

The Illinois Mosquito and Vector Control Association (IMVCA) is a non-profit organization consisting of individuals interested in promoting the economic, environmental, and ecologically sound management of mosquitoes and other arthropod vectors and pests, in order to enhance human and animal health and well-being. The mission is to provide leadership, information, and education concerning the suppression of mosquito and other vector transmitted diseases and the reduction of pest annoyance levels caused by mosquitoes and other arthropods of public health importance in Illinois. The annual meeting is primarily attended by local health department personnel, mosquito abatements districts, universities, and other members interested in vectors in Illinois.

The Vector Program provides a presentation at the IMVCA conference, which is held annually in November. Additionally, the Vector Program staff are active members in IMVCA, preside on the IMVCA Executive Board, and serve as the current association vice-president.

Centers for Disease Control and Prevention (CDC) Vector Week

The Vector Program attends the annual CDC Vector Week grantee meeting in Fort Collins, Colorado, which shares vector-borne disease information to Epidemiology and Laboratory Capacity funding recipients, vector control organizations, and state and local health departments.

Educational Materials Produced

The Vector Program has created, ordered, and/or printed several educational materials for use by local health departments, clinicians, and citizens of Illinois. These materials have been provided directly to local health departments, shared on social media accounts, and distributed at the Illinois State Fair and DuQuoin State Fair.

The Vector Program has created the following items in-house and printed them for public use.

- After You Pick, Check for Ticks (**Attachment 4**)
 - Mushroom hunting flyer to educate the public on how to protect against ticks while foraging for morels and other edible mushrooms.
- Got Lyme? Illinois Does (**Attachment 4**)
 - Poster created for Lyme Disease Awareness Month to inform clinicians and the public that Lyme Disease is present in Illinois and should be considered in tickborne disease diagnoses.
- Tick Identification Wallet Card (**Attachment 4**)
 - A 3.5 inch by 2 inch card illustrates common ticks encountered in Illinois and how to remove them. The Vector Program had 100,000 copies of this card printed and distributed them to local health departments and the public at the state fairs.

The Vector Program also ordered and/or had printed several CDC materials for distribution to local health departments, clinicians, and the public.

- 1,000 copies of *Fast Facts: Protecting Yourself from Ticks and Mosquitoes* (11 inch by 4 inch fact card)
- 20,000 copies of *Tickborne Diseases of the US: A Reference Manual for Health Care Providers*
- 1,000 copies *Prevent Tickborne Diseases* (Bookmark)
- 1,000 copies of *Prevent tickborne disease in people and pets* (2.5 inches by 8.5 inches)
- 1,000 copies of *Prevent Bug Bites - What to Know Before You Go* (11 inches by 17 inches poster)
- 1,000 copies of *Lyme Disease: What you need to know* (eight-page brochure)

Communicable Disease Control Section-Vector-Borne Diseases (VBDs) Program

1. Human Vector-Borne Diseases Surveillance

- The VBD Program is managed by a VBD epidemiologist program manager who conducts human surveillance on 22 mosquito- and tick-borne diseases. Surveillance is the ongoing, systematic collection, analysis, and interpretation of health-related data essential to planning, implementation, and evaluation of public health practice. IDPH conducts human VBD surveillance through electronic reporting via the Illinois National Electronic Disease Surveillance System (I-NEDSS). I-NEDSS is an electronic platform by which suspect human VBD cases with positive laboratory reports are electronically imported from commercial and private laboratories for patients who reside in Illinois. Some cases may be manually entered into I-NEDSS by IDPH or the local health department (LHD) if the laboratory is not enrolled in electronic reporting via I-NEDSS. The program epidemiologist utilizes I-NEDSS 1 to monitor the imported VBD data to ensure the LHD is investigating in a timely manner for each suspect case in their respective jurisdiction and to create daily, weekly, and quarterly reports by querying data to identify areas that require additional follow up as follows:
 - Daily review of new laboratory and provider reports in the Illinois National Electronic Disease Surveillance System (I-NEDSS) for 22 VBDs that involves monitoring for cases that are new or unusual to Illinois.
 - Weekly review of six reports for 22 tick- and mosquito-borne illnesses to identify gaps in data. Variables queried include clinical symptoms, laboratory reports, serotype, treatment, exposure history, where disease was acquired, death information, case classification, and cases that have been opened greater than 30 days.
 - Review of death certificates in the Illinois Vital Records Reporting System (IVRS) to determine if the cause of death was attributed to the illness or complications from the illness.
 - Cases found to have gaps in data are sent back to the LHD conducting the investigation and followed up with an email to the LHD requesting further study and completion of the report before it can be closed.
 - For cases opened greater than 30 days, an email is sent to LHDs notifying them their case investigations need to be completed so the case can be closed.
 - Respond to questions from the CDC regarding case investigation data that has been submitted to them.
 - Monitor cases who have tested positive for a VBD and have received or donated blood and received or donated organs/tissue for transplant into another person. When a case such as this has been identified, further follow up and collaboration with the CDC, the local health department, the blood and/or organ/tissue donor facility, and potentially another state public health department must be done for testing of the donor and/or recipient for the pathogen in question.
- Laboratory reports are the primary means by which IDPH receives suspected reports of Lyme disease and other VBDs. In accordance with Illinois Administrative Code Section 690.698 Tickborne Diseases, laboratories report suspected cases of Lyme diseases (and other tick-borne diseases) to IDPH via electronic laboratory reporting (ELR) into the Illinois National Electronic Disease Surveillance System (I-NEDSS) within seven days. Each lab report is electronically sent

to the LHD in the jurisdiction where the case resides via I-NEDSS so the LHD can begin their investigation.

- The VBD Program manager maintains and updates information on VBDs on the IDPH web portal, which is accessible to LHD staff. Everything the LHD needs to know about conducting its case investigation for Lyme disease and other VBDs is on the IDPH web portal CD Topics A through Z pages. Each reportable VBD has a web portal page specific to that disease.

The information below is a snippet of what the VBD Program epidemiologist has posted on the IDPH Lyme disease web portal page to assist LHDs in conducting case investigations and to provide links to free educational materials for health care providers in their jurisdictions, including materials they can distribute to their patients. There is an additional section for Education/Prevention of Lyme Disease with additional resources at the bottom of the page that are not included below. LHD staff have access to the IDPH web portal.

[Start](#) > [Home](#) > [Communities](#) > [Communicable Disease Control](#) > [CD Topics A-Z](#)

Lyme Disease

Lyme disease is caused by the bacterium *Borrelia burgdorferi* and *Borrelia mayonii* and is transmitted to humans through the bite of infected blacklegged (deer) ticks also known as *Ixodes scapularis*, which are present throughout Illinois and the eastern half of the United States. Ticks actively quest for a host when temperatures are at or above 40 degrees Fahrenheit or 4 degrees Celsius.

In the spring, before tick activity peaks, local health departments should consider posting tick prevention posters, signs, and brochures they can order **free of charge** from CDC at parks and other outdoor recreational areas in their jurisdictions that may be potential tick habitats. Tick habitats include areas with tall grass and forested or brushy areas with leaf litter where deer and rodents carrying ticks and tickborne pathogens may be present.

[Rules of the Illinois Department of Public Health](#)

NEW 2022 Lyme Disease Case Definition - new pathogen (*Borrelia mayonii*) also transmits Lyme disease and should be added to laboratory testing panels. See laboratory testing below for new testing criteria.

2018 Tickborne Diseases of the US – A CDC Reference Manual for Healthcare Providers – Please order this for your LHD and health care providers in your jurisdiction **free of charge** by clicking here.

[Studies/Articles and Other Resources](#): Please share these resources with health care providers in your jurisdictions.

NEW peer-reviewed study Estimating the Frequency of Lyme Disease Diagnoses, United States, 2010–2018, Kugeler_EID_2021.pdf

NEW peer-reviewed study Changing Trends in Age and Sex Distributions of Lyme Disease—United States, 1992-2016, Kugeler_PHR_2021.pdf

NEW peer-reviewed study Tick and Tickborne Pathogen Surveillance as a Public Health Tool in the United States, *Journal of Medical Entomology*, 58(4), 2021, 1490-1502

Use of Commercial Claims Data for Evaluating Trends in Lyme Disease Diagnoses, United States, 2010-2018

Estimating the Frequency of Lyme Disease Diagnoses, United States, 2010–2018

National Institute of Health Study: Dangers of Long-Term or Alternative Treatments for Lyme Disease

Syndromic surveillance of ED visits for tick bites by time, region, age, and sex

[IDPH Lyme Disease Public Web Page](#)

Illinois Interactive Tick Surveillance Map

TickNET is a collaborative public health effort in tickborne disease surveillance, research, education, and prevention.

Vector-Borne Diseases Table of Symptoms and Incubation Periods: Please use this document to make sure your case falls within the appropriate incubation period for the specific disease you are investigating.

2021 Lyme disease exposure map

Lyme disease Clinical Symptoms

BASIC CASE INVESTIGATION PROCEDURES

Private and commercial laboratories enrolled in electronic laboratory reporting (ELR) via I-NEDSS report all positive lab test results to IDPH via I-NEDSS within seven days. For laboratories not enrolled in ELR, the LHD should manually enter the lab into I-NEDSS within seven days. If the suspect case meets the 2022 Lyme disease case definition (see link above), complete the investigation utilizing the I-NEDSS case report and the 2022 Lyme disease case definition. Be sure to answer ALL questions with Yes, No, or Unknown. **IDPH assumes I-NEDSS questions left blank were not investigated.**

Information to obtain from the patient's health care provider:

Symptom onset date - Date the case first had symptoms. This should be the date reported in the "Disease Onset Date" field in I-NEDSS (General Illness section).

Symptoms including 3 phases of illness with incubation period for each stage:

1. **Localized Early Infection** (3-30 days after exposure) - during this time you may see the presence of an *Erythema Migrans* (\geq 5cm and must be physician diagnosed), fever, chills, headache, fatigue, muscle and joint aches, swollen lymph nodes.
2. **Early Disseminated Infection** (1-2 months after exposure) - during this time you may see multiple EM rashes, facial palsy, meningitis, short term memory deficits, heart palpitations, irregular heartbeat, dizziness, shortness of breath.
3. **Later Disseminated Infection** (2-3 months after exposure per CDC has been noted six months after exposure) - during this time you may see arthritis with severe joint pain and swelling in large joints, i.e., knees, hips, etc.

Exposure history - This includes the Tick Habitat and Tick Bite sections (see below) of the case report.

Exposure is defined as having been in wooded, brushy, or grassy areas (potential tick habitats). Since infected ticks are not uniformly distributed, a detailed travel history to verify whether exposure occurred in a high- or low-incidence state is needed. An exposure in a high-incidence state is defined as exposure in a state with an average Lyme disease incidence of at least 10 confirmed cases/ 100,000 for the previous three reporting years. A low-incidence state is defined as a state with a disease incidence of <10 confirmed cases/100,000 (see [Lyme Disease Data Tables: Historical Data](#)). A history of tick bite is not required.

Tick Habitat: Was the patient in a potential or known tick habitat? (e.g., tall grass, pasture, woods, brush/scrubby vegetation). If yes, report date the patient entered the tick habitat and the date the patient left the tick habitat. Type of tick habitat should also be reported. If you select "Own Property," include complete address of the property because we cannot assume it is where the case resides. If there are multiple locations, then click the "Add Another" button to add each tick habitat the case had been. Please include specific address with city, state, county of each tick habitat the case had been in in the previous 1-3 months prior to symptom onset date. This information is used for exposure maps.

Tick Bite: Was there a recognized tick bite? Answer this yes, no, unknown. If yes, then click Add Tick Bite button and complete this section in full, including specific address and include city, state, county where case was at time of tick bite.

Travel History: Obtain a complete travel history, which should include the following (below). If the exact dates are unknown, you can put approximate dates and make a note of that in the epidemiologic comments section. Also, report if the patient had been in a tick habitat during their travel.

1. Destination
2. Departure date
3. Return date

Treatment: This is antibiotics the patient was prescribed after becoming clinically ill. CDC wants to know what antibiotics the patient took and if they took the entire prescription as directed by their health care provider.

Likely Mode of Exposure: This is a required drop down that lets you select from blood transfusion, occupational, tick-borne, or other. If you select Other, please type in your answer in the text box below it.

Deceased: This question is in the Demographics section of the case report. CDC requires this question to be answered (yes, no, unknown).

If Deceased is answered YES, the following two questions must be answered:

1. "Deceased Date"

2. “If the patient died, did the patient die from this illness or complications from this illness?” must also be answered. This question is in the General Illness section.

- As the LHD begins their investigation, they review the lab to ensure it meets the criteria set forth in the national Lyme disease case definition set forth by the Council of State and Territorial Epidemiologists (CSTE). For labs meeting these criteria, the LHD then contacts the ordering health care provider’s office regarding the case to discuss the lab results and obtain additional case information outlined in the I-NEDSS case report form. The case report is divided into nine sections consisting of numerous questions related to the section title, as follows: Demographics; General Illness, Clinical Symptoms, Laboratory Testing, Tick Habitat, Tick Bite, Treatment, Epidemiologic Data, and Reporting Source information.
- The LHD utilizes the new 2022 Lyme Disease Case Definition for all cases with a symptom onset date of January 1, 2022 or later to ascertain the status of each case it investigates. Case status classification distinguishes if the case has met the qualifying criteria to be counted as a case or as not a case. This national case definition is standardized across all 50 states and U.S. territories, so the same criteria are used when determining case status.
- Local health departments have been trained to educate their health care providers on reporting requirements (690.200) for VBDs when underreporting has been identified in their jurisdiction.
- LHDs have been trained to contact the health care provider (and not the case) to obtain all case information; however, if information on tick habitat, tick bite, and travel history was not collected by the provider, the LHD may contact the patient to obtain that information.
- The LHD has 30 days to complete their investigation and submit to IDPH for review. IDPH VBD staff review each case to ensure accuracy and completeness of each report. All reports that are incomplete or have reported data that do not make sense, e.g., symptom onset date reported prior to exposure history date, are sent back to the LHD to complete the missing information or update the information in question.
- Once the case has been completed and final review by IDPH VBD Program staff has been done, the case is closed. All cases that have been closed by IDPH VBD staff are sent to the CDC National Notifiable Disease Surveillance System (NNDSS) via secure data transfer on a weekly basis.

2. Funding

The IDPH VDB Program epidemiologist and program specialist positions are funded by the CDC Epidemiology and Laboratory Capacity (ELC) grant. The VBD Program was awarded \$16,500 for printing and supplies for FY22. Additional funding opportunities for VBD human surveillance activities have not been identified.

3. Government guidance and recommendations of the Centers for Disease Control and Prevention

IDPH VBD Program follows and recommends to local health departments guidance on the surveillance of all mosquito and tick-borne VBDs provided from various branches of the CDC Division of Vector-Borne Diseases (DVBD). IDPH guidance and recommendations are acquired from the following DVBD branches:

- Arboviral Diseases Branch
- Bacterial Diseases Branch
- Dengue Branch

- Rickettsial Zoonoses Branch

4. Designated Web Page

The IDPH web page for Lyme disease can be found at this link: <https://www.dph.illinois.gov/topics-services/diseases-and-conditions/diseases-a-z-list/lyme-disease>.

Content on the Lyme disease web page, noted below, includes, but is not limited to, the prevention, detection, and treatment of Lyme disease and is intended for physicians, other health care professionals and providers, and the public subject to an increased risk of contracting Lyme disease.

Information for Clinicians

A new section has been created on the IDPH Lyme disease web page that includes subject matter for clinicians, including physicians, other health care professionals and providers, as well as other persons subject to an increased risk of contracting Lyme disease. Content for clinicians on the Lyme disease web page includes information on the following:

- Lyme disease incidence
- Transmission
- Patient assessment considerations
- Symptoms of the three clinical phases of Lyme disease and incubation period for each phase
- Collection of a thorough exposure and travel history from the patient
- Diagnostic laboratory testing
- CDC treatment recommendations for Lyme disease based on clinical presentation
- Post exposure prophylaxis
- Prevention

Tools for clinicians

- CDC Tickborne Diseases of the United States: A Reference Manual for Health Care Providers (with information on ordering hardcopies free of charge),
- Illinois Interactive Tick Surveillance Map
- Caring for your patient after a tick bite
- How to remove an attached tick
- IDPH Lyme Disease Pocket Cards (for public consumption; print your own or how to request cards from IDPH VBD Program)
- CDC Lyme Disease Educational Brochures and how to order free of charge
- Scientific peer-reviewed research articles (see #5 below)

Continuing Education for Clinicians – CDC Training Modules:

- [MODULE 1: Introduction to Tickborne Diseases and Disease Prevention](#)
- [Module 2: Lyme Disease Clinical Overview](#)
- [Module 3: Lyme Disease Testing and Diagnosis](#)
- [Module 4: Lyme Disease Treatment and Management](#)

Lyme Disease Data

The following data are reported on the IDPH Lyme disease web page under the Lyme Disease Data tab.

- Reported tickborne infections in Illinois from 2011-2021
- Map of reported incidence rate of Lyme disease by county, 2010-2019
- Human VBD exposure data for Lyme disease and Rocky Mountain Spotted Fever are shared with the EH Vector Control Program for the following purposes:

- a. To inform of human cases in areas where ticks have not been collected and tested for tick-borne pathogens so tick drags in the area(s) can be done.
- b. Human exposure maps for Lyme disease and RMSF are created using VBD data by EH Vector Control staff proficient in the ARC GIS mapping application.

Lyme Disease Task Force

A new tab was added to the main IDPH Lyme disease web page June 28, 2022, linking information on task force meetings in order of occurrence with the most recent task force meeting listed first.

5. Peer-reviewed scientific research articles

Articles published on the IDPH public web page include synopses with a link to each article. Articles are as follows:

- a. Changing Trends in Age and Sex Distributions of Lyme Disease—United States, 1992-2016
- b. Estimating the Frequency of Lyme Disease Diagnoses, United States, 2010–2018
- c. Tick and Tickborne Pathogen Surveillance as a Public Health Tool in the United States, May 2020

6. Educational Materials

- Webinar

The IDPH VBD hosts an annual webinar to educate local health department staff prior to tick and mosquito season. The May 18, 2022, webinar, which was on Lyme disease surveillance during Lyme Disease Awareness Month, had 224 staff from LHDs in attendance. The webinar covered Lyme disease surveillance: epidemiology and statistics/incidence, reporting requirements, case investigation process; utility of the IDPH Illinois Tick Surveillance Map; etiologic pathogens for Lyme disease; transmission, transmission cycle, and tick habitat; and risk factors, symptoms, diagnosis, treatment, prevention, and utility of the 2022 national case definition for Lyme disease in a case investigation.

- IDPH Web Page

Information for the public on the prevention, detection, and treatment of Lyme disease

- What is Lyme disease?
- How does a person get Lyme disease?
- What are the symptoms of Lyme disease?
- When should I seek a physician’s care after a tick bite?
- Can Lyme disease be treated?
- How do I avoid getting bitten by a tick?
- Resources (EH Vector Control Program and CDC VBD Program)
 - INHS Medical Entomology Laboratory Active Tick Surveillance
 - IQuery
 - National Data and Statistics
 - Vector Control and Surveillance
 - Tickborne Diseases of the United States, Reference Manual for Health Care Providers
 - Information for Hunters on Ticks
 - Lyme Disease Data and Statistics
- Publications (EH Vector Control Program and CDC VBD Program)
 - Tickborne Disease Incidence Maps
 - Reported Tickborne Cases 2011-2021
 - Lyme Disease Pocket Card

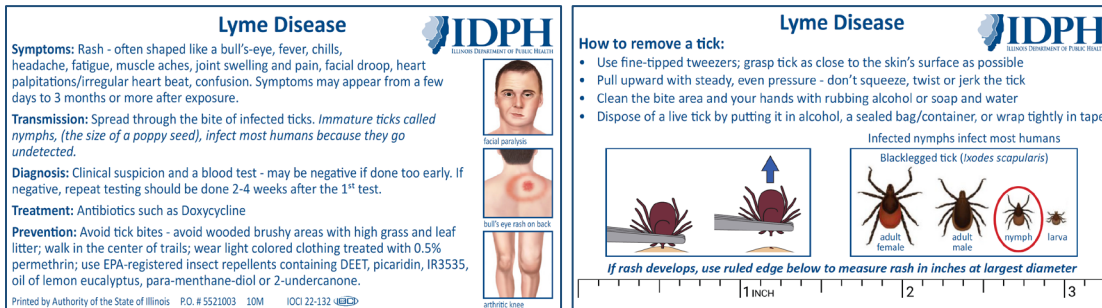
- Tick Prevention Poster
 - 2021 Human Exposures
 - 2020 Human Exposures
 - 2019 Human Exposures
- Partnership with Illinois Department of Natural Resources (IDNR)
 - Office of Land Management – brochures, tick signs, pocket cards distributed to state park visitor centers.
 - Office of Licenses and Permits – In October 2022, 40,000 Lyme disease pocket cards distributed to facilities where hunting and fishing licenses are sold – one to be presented with each license sold.
- Pamphlets, Brochures, Tick Signs, Pocket Cards

IDPH Vector-Borne Diseases Program ordered and/or printed the following pamphlets, brochures, tick signs, and pocket cards and distributed to IDNR for distribution at state park visitor center kiosks (trail signs posted at trail entrances).

IDPH Lyme Disease Pocket Cards

Produced by IDPH VBD Program epidemiologist, approximately the size of a credit card. The pocket cards have been distributed to 1) Illinois facilities where hunting and fishing licenses are sold; 2) IDNR for distribution at state park visitor centers; and 3) the public at the 2021 Illinois State Fair and the DuQuoin State Fair.

- IDPH Lyme Disease Pocket Card – educational information on the symptoms, diagnosis, treatment, and prevention of Lyme disease. One side of the card has a ruled edge for the purpose of measuring the diameter of the erythema migrans rash, and information on how to remove an attached tick. See graphic below.
- IDPH Spotted Fever Group Rickettsial Diseases Pocket Card – bi-fold pocket card with educational information on the symptoms, diagnosis, treatment, and prevention of RMSF and *Rickettsia parkeri*. Also included is a timeline of symptoms for RMSF and information on how to remove an attached tick. See graphic below.




State of Illinois
Illinois Department of Public Health

Spotted Fever Group Rickettsioses

Rocky Mountain Spotted Fever (RMSF) and *Rickettsia Parkeri*

Symptoms:

- Rocky Mountain Spotted Fever**
Early (1-4 days) - high fever, severe headache, rash initially appearing as pinpoint dots, swelling around eyes and hands, muscle aches, upset stomach with nausea and vomiting.
Late (5 days or longer) - brain swelling, altered thought processes, difficulty breathing, coma, risk of death if not treated prior to 5th day.
- Rickettsia Parkeri*** — fever, headache, rash, and dark scab called an eschar at the site of tick attachment.



Transmission: RMSF is spread through the bite of infected American dog ticks, and *R. parkeri* is spread through the bite of infected Gulf Coast ticks. Immature ticks called nymphs (the size of a poppy seed), infect most humans because they frequently go undetected.

Diagnosis: clinical suspicion and a blood test or testing of tissue from a biopsy.

Treatment: RMSF can be severe/fatal if not treated within 5 days. Treatment for RMSF and *R. Parkeri* infections is antibiotics such as Doxycycline. About 10% of RMSF cases don't develop a rash so treatment should not be withheld in absence of rash.

Prevention: Avoid contact with ticks – walk in the center of trails and wear clothing and gear treated with 0.5% permethrin. Inspect yourself and pets for ticks after being in brushy or wooded areas or spent time gardening or hunting. Use insect repel-lant registered by EPA containing DEET, picaridin, IR3535, Oil of Lemon Eucalyptus (OLE), para-menthane-diol (PMD), or 2-undecanone.

Rocky Mountain Spotted Fever Symptoms Timeline

Doxycycline is most effective at preventing severe illness and death if administered within the first five days of symptoms.

Doxycycline is most effective at preventing severe illness and death if administered within the first five days of symptoms.

Days 1-2: high fever, headache, muscle aches.	Days 2-4: faint rash on hands and feet.	Days 5-7: rash worsens and spreads.	Days 7-9: rash turns purple. If untreated, risk of death increases.
--	--	--	--

<https://www.cdc.gov/ticks/tickbornediseases/rmsf.html>

https://www.cdc.gov/rmsf/pdf/clinical_timeline_rocky_mountain_spotted_fever_08_english_7-2-2018-3-p.pdf

<https://www.cdc.gov/ticks/tickbornediseases/rickettsiosis.html>

Printed by Authority of the State of Illinois 30 7/22

IOCI 22-1321

How to remove an attached tick:

- Use fine-tipped tweezers; grasp tick as close to the skin's surface as possible.
- Pull upward with steady, even pressure - don't squeeze, twist or jerk the tick.
- Clean the bite area and your hands with rubbing alcohol or soap and water.
- Dispose of a live tick by putting it in alcohol, a sealed bag/container, or wrap tightly in tape.



Images provided by CDC—scale of tick images vary



Infected nymphs (circled) infect most humans

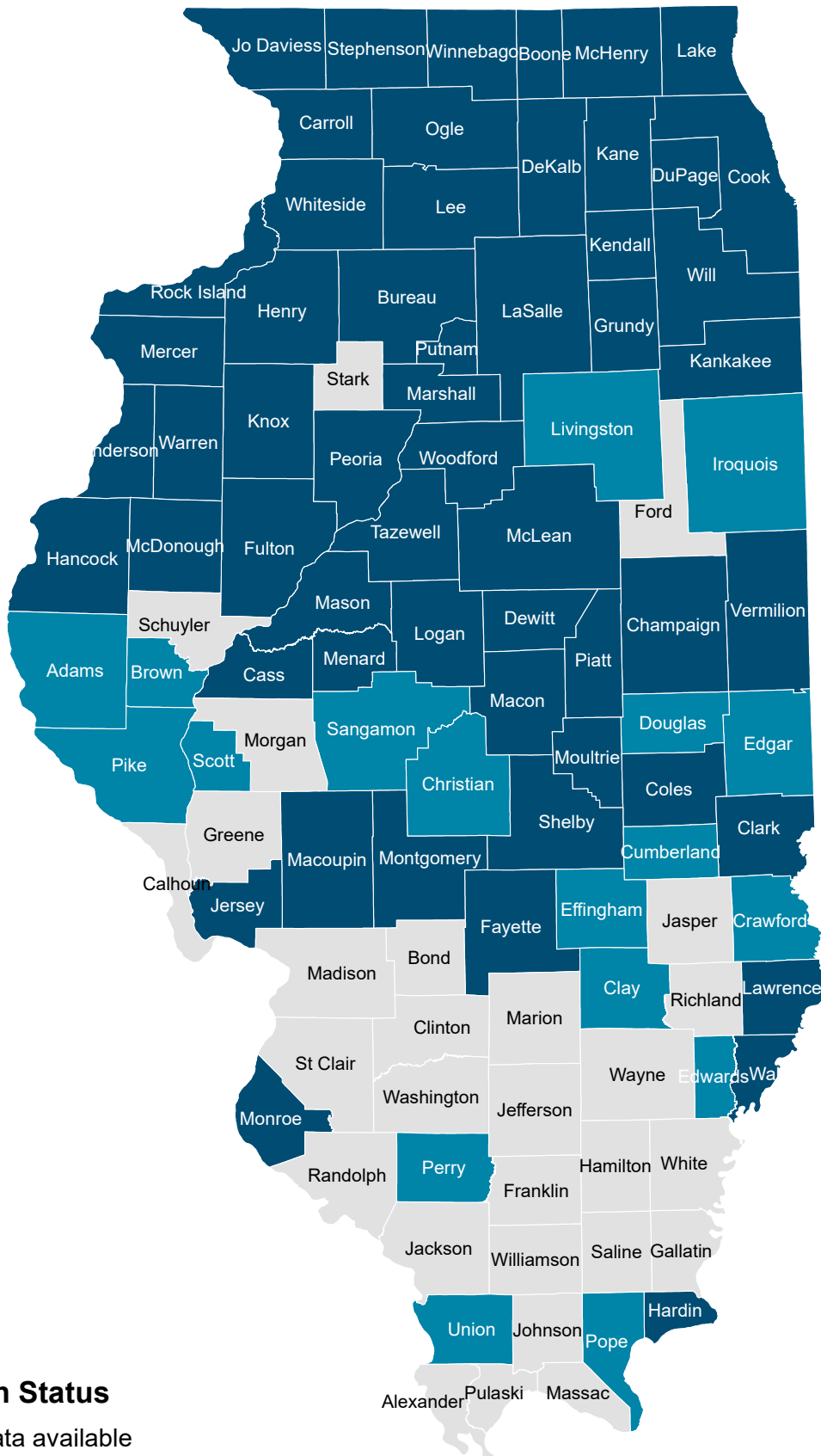
A total of 260,000 Lyme Disease pocket cards and 45,000 Spotted fever Rickettsiosis pocket cards were ordered and are being distributed to Illinois State parks, the Illinois State Fair, Illinois vendors of hunting and fishing licenses, and local health departments. Below is a list of all the brochures ordered from CDC and mailed to IDNR for distribution at state parks since 2019. See **Attachment #5** for pictures of the brochures and trail sign.

Brochure/Sign	Publication ID	# Ordered	Language
Lyme Disease What you need to know?	221850	13,240	English
Tickborne Disease Prevention and Tick Removal Bookmark	300006	9,600	Spanish
Prevent Tickborne Diseases in People & Pets Bookmark	300483	9,050	English
Prevent Tickborne Diseases Bookmark	222349	11,350	English
Prevent Tickborne Diseases Bookmark	301105	1,000	Chinese
Rocky Mountain Spotted Fever Signs and Symptoms Poster	300485	1,240	English
Trail Sign: Prevent Tick Bites	220462	650	English
Lyme Disease Pocket Cards	IOCI 22-132	20,000	English
Spotted Fever Rickettsiosis Pocket Cards	IOCI 22-1321	5,000	English

Attachment 1

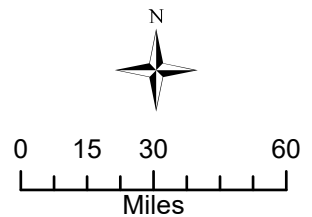
Ixodes scapularis Population Status by County

Ixodes scapularis Population Status by County



Population Status

- No data available
- Reported
- Established

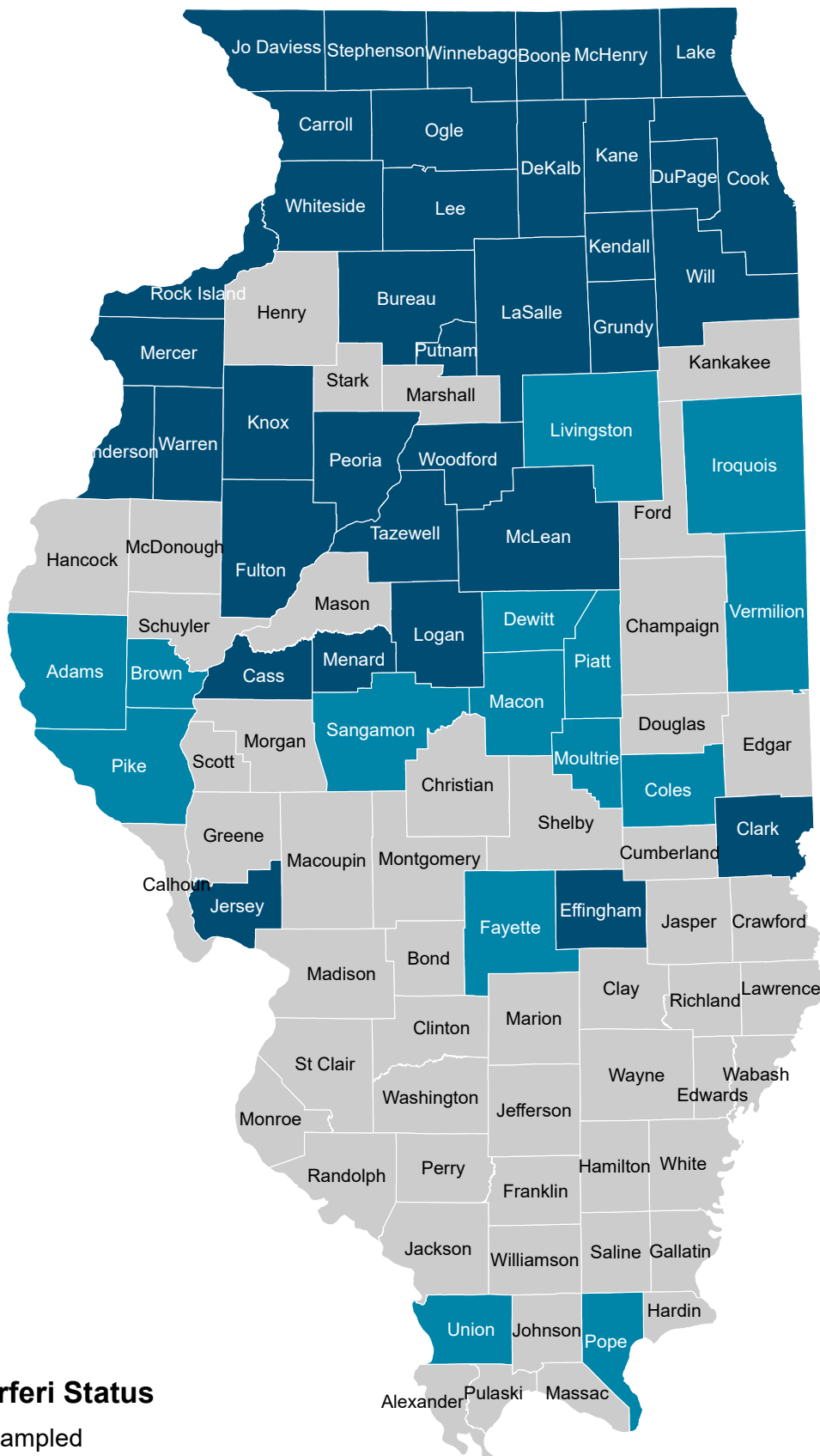


Attachment 2

Borrelia burgdorferi (causative agent of Lyme Disease)

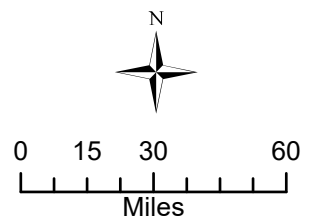
Distribution Map by County

Borrelia burgdorferi Detection Status by County



B. burgdorferi Status

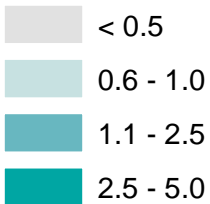
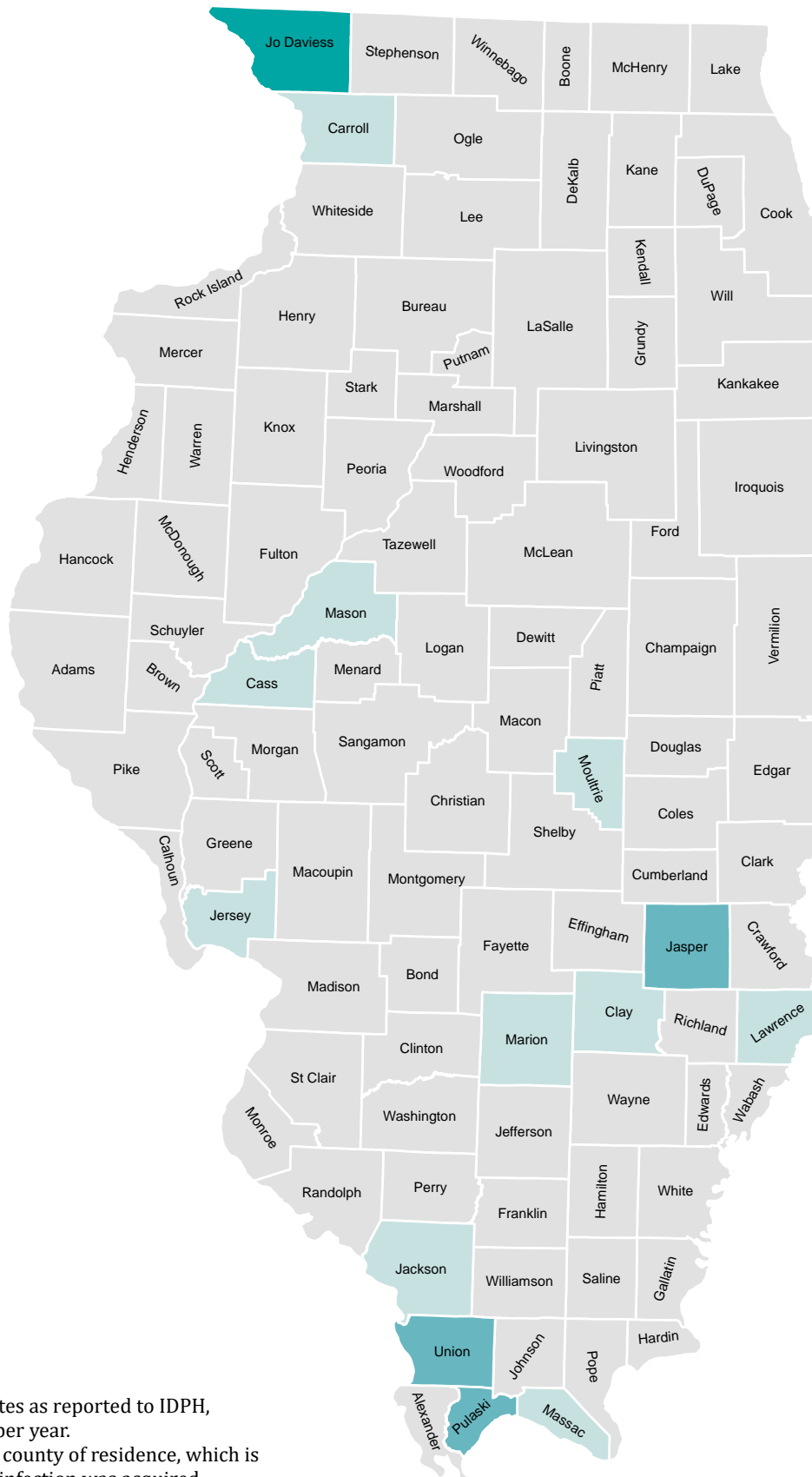
- Not Sampled
- Not Detected
- Detected



Attachment 3

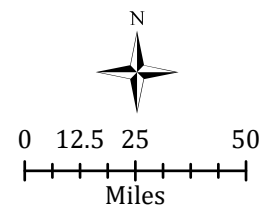
10-year Tickborne Disease Incidence Maps

Reported Incidence Rate* of Anaplasmosis By County, 2010-2019

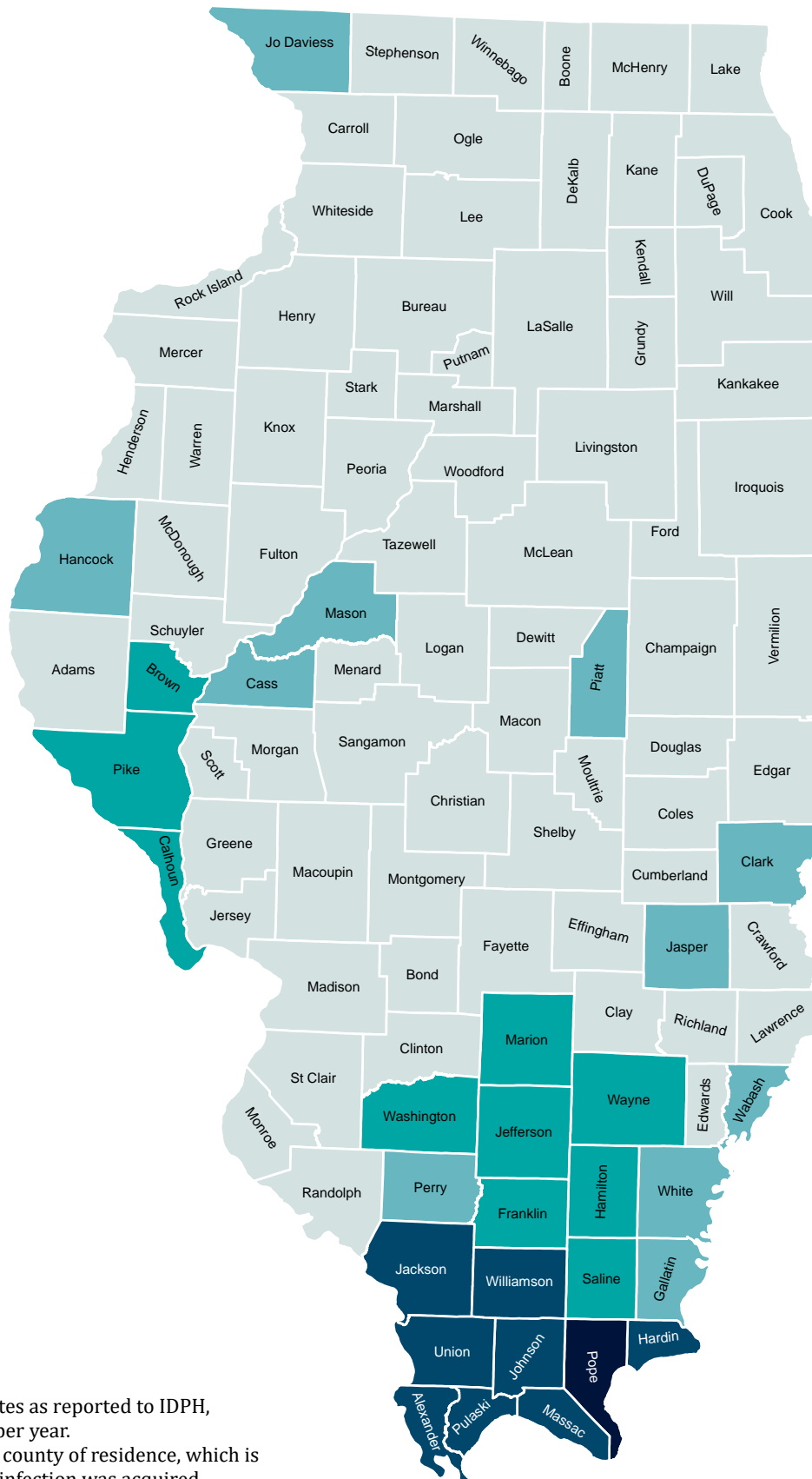


*Average incidence rates as reported to IDPH, per 100,000 persons per year. Cases are reported by county of residence, which is not always where the infection was acquired. Rates were calculated using the 2010 U.S. Census.

Date: 10/20/2021



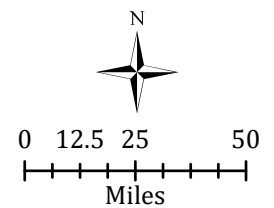
Reported Incidence Rate* of Ehrlichiosis By County, 2010-2019



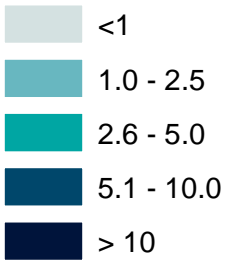
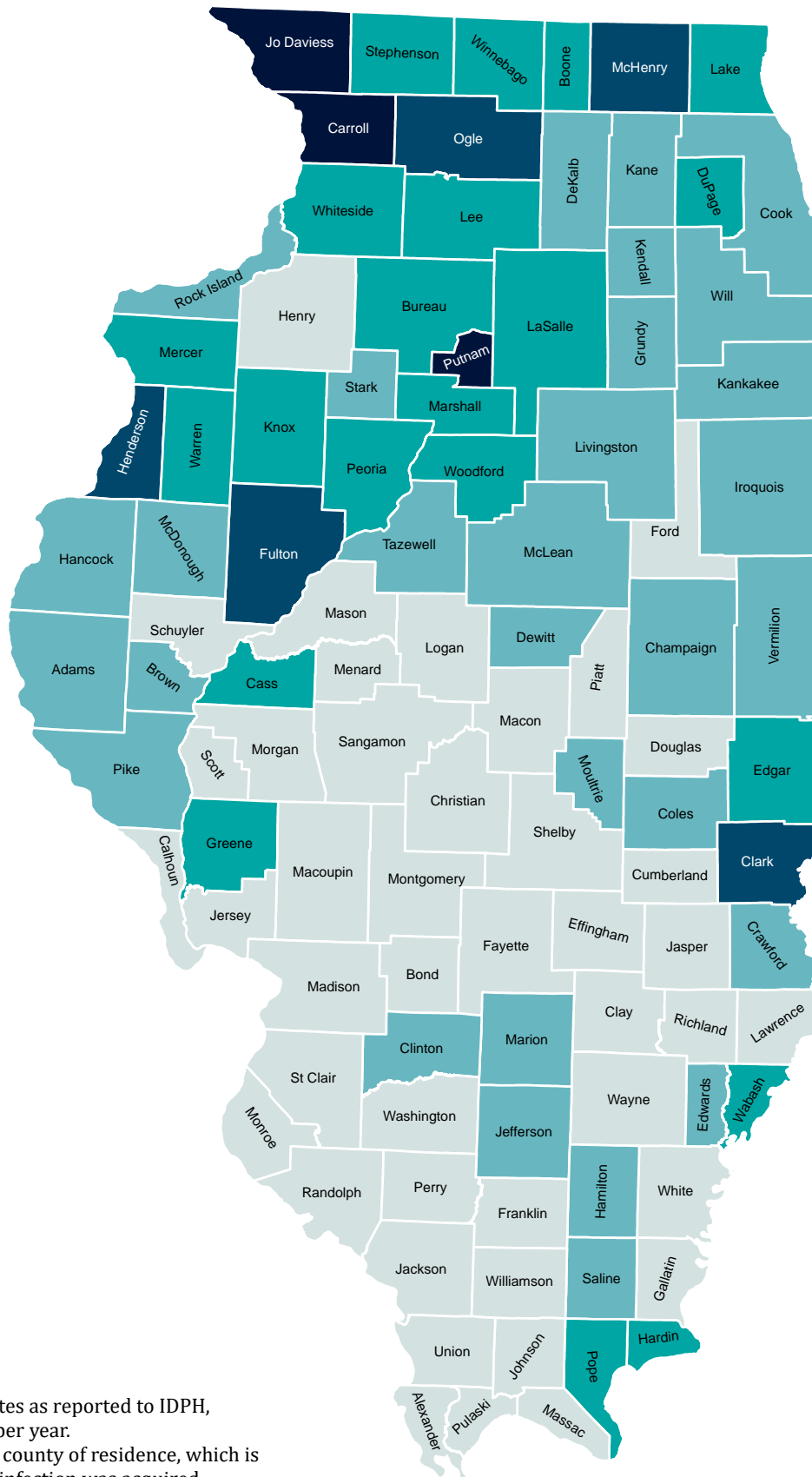
- < 1
- 1.0 - 2.5
- 2.6 - 5.0
- 5.1 - 10.0
- > 10

*Average incidence rates as reported to IDPH, per 100,000 persons per year. Cases are reported by county of residence, which is not always where the infection was acquired. Rates were calculated using the 2010 U.S. Census.

Date: 10/20/2021

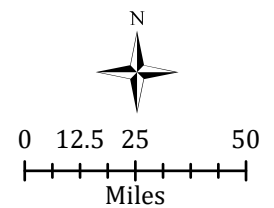


Reported Incidence Rate* of Lyme Disease By County, 2010-2019

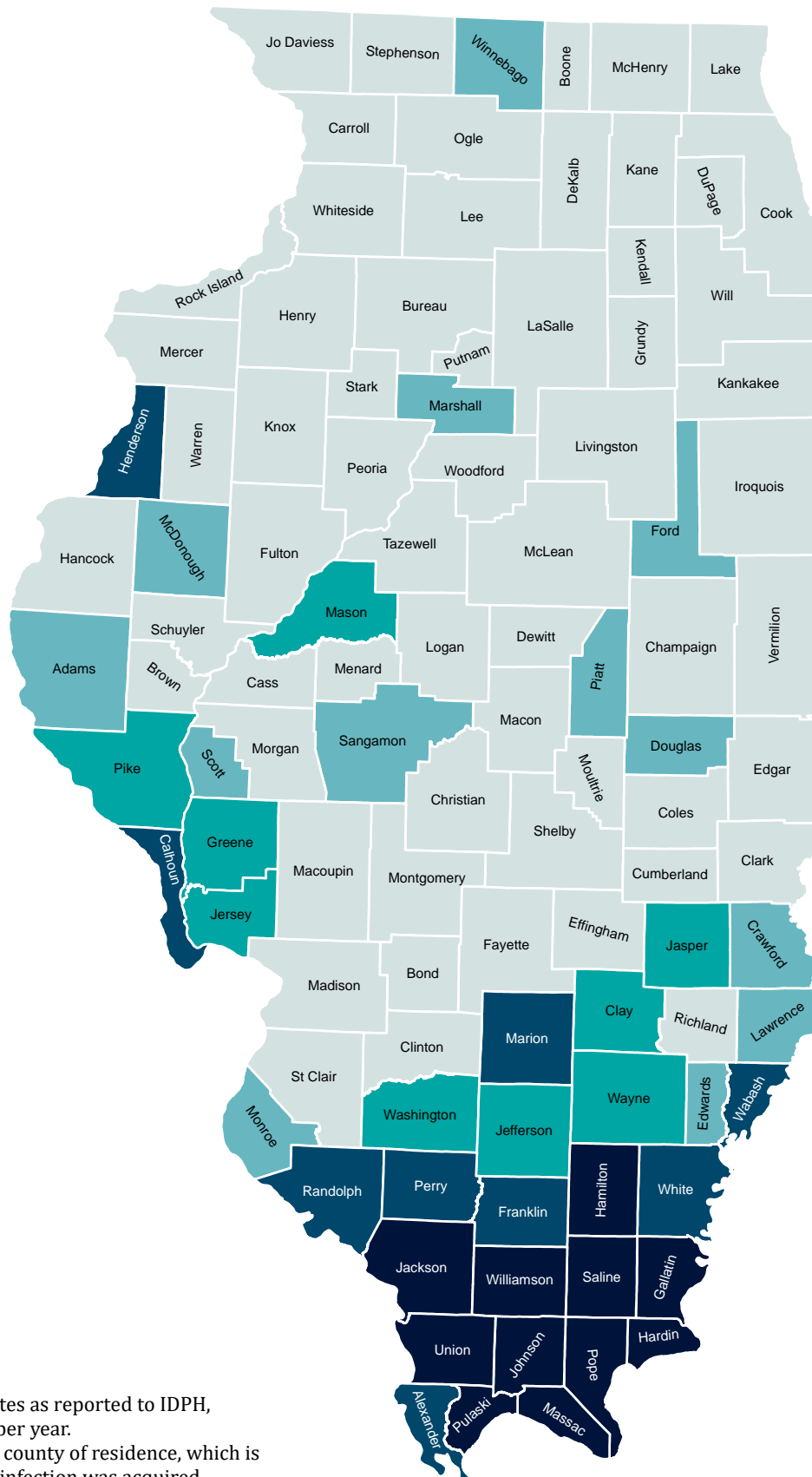


*Average incidence rates as reported to IDPH, per 100,000 persons per year. Cases are reported by county of residence, which is not always where the infection was acquired. Rates were calculated using the 2010 U.S. Census.

Date: 10/20/2021



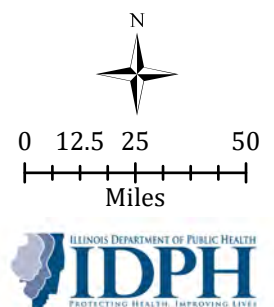
Reported Incidence Rate* of Spotted Fever Group Rickettsiosis By County, 2010-2019



- < 1
- 1.0 - 2.5
- 2.6 - 5.0
- 5.1 - 10.0
- > 10

*Average incidence rates as reported to IDPH, per 100,000 persons per year. Cases are reported by county of residence, which is not always where the infection was acquired. Rates were calculated using the 2010 U.S. Census.

Date: 10/20/2021



Attachment 4
Educational Materials



After you pick, check for ticks!



American Dog Tick



Lone Star Tick



Blacklegged Tick

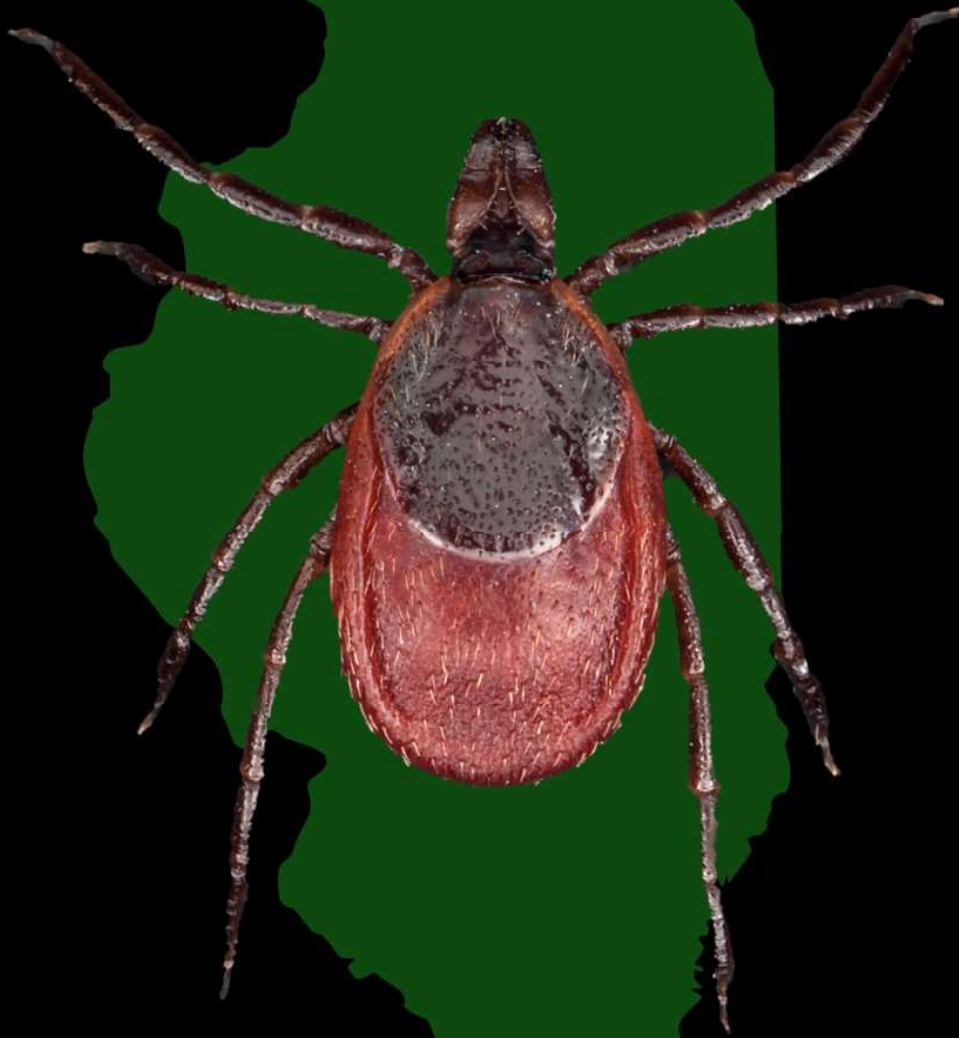
Tick Safety Tips

1. Wear an EPA-approved bug repellent such as DEET, picaridin, or IR3535.
2. Treat clothing with products containing permethrin and allow clothes to dry for 24 hours before wearing.
3. Tuck socks and pants into boots. Wear light colored clothing so ticks can be easily seen.
4. Remove clothing and place in a hot dryer for 15 minutes after coming indoors.
5. Shower to remove any loose ticks and check your body for attached ticks.
6. Remove ticks with tweezers. Pull up with a steady pressure, don't squeeze.
7. Contact your doctor if you experience any of the following symptoms: fever, rash, body aches, headache, or chills.



State of Illinois
Illinois Department of Public Health

got lyme?



Illinois does.



Division of Environmental Health
Questions: 217-782-5830 dph.illinois.gov

Common Illinois Ticks

Preventing Tick Bites

Ticks can be found in forests, tall grasses, and leaf litter.

- Wear light colored clothing and tuck pants into socks.
- Use an EPA-registered insect repellent and follow label instructions.
- Treat outdoor clothing and gear with permethrin.
- Walk in the center of trails. Avoid brushing against tall grass.
- Perform daily tick checks on yourself, children, and pets.



Blacklegged Tick

(Ixodes scapularis)

Lyme Disease, Anaplasmosis, Babesiosis, Ehrlichiosis, *Borrelia miyamotoi* Disease and Powassan Virus



Lone Star Tick

(Amblyomma americanum)

Ehrlichiosis, Heartland Virus, Bourbon Virus and Tularemia



Gulf Coast Tick

(Amblyomma maculatum)

Rickettsia parkeri Rickettsiosis



American Dog Tick

(Dermacentor variabilis)

Rocky Mountain Spotted Fever and Tularemia



Division of Environmental Health
217-783-5830 • dph.illinois.gov

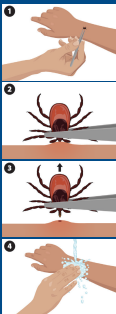
Don't Get Sick, Check for Ticks!

After you come indoors:

- Check your clothing for ticks.
- Wash and dry clothes on high heat to kill ticks.
- Examine gear and pets.
- Shower within 2 hours to wash ticks off your body.
- Check your body for ticks.

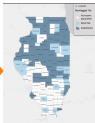


How To Remove a Tick



1. Grasp attached tick with tweezers as close to the skin as possible.
2. Pull up on the tick with steady pressure. Do not squeeze or twist.
3. Wash your hands and the bite area with soap and water.
4. Dispose of tick by sticking it to a piece of tape and placing in the trash or flushing the tick down the toilet.

Stay Up-To-Date
on Illinois Tick Data
<https://arcg.is/15fDSO>

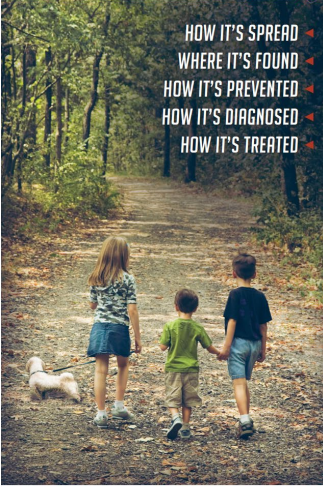


Watch for signs and symptoms of tickborne disease. See your doctor if you develop a rash, fever, or other flu-like symptoms within 30 days after a tick bite.

Attachment 5

Educational Brochures/Sign

LYME DISEASE: WHAT YOU NEED TO KNOW



HOW IT'S SPREAD
WHERE IT'S FOUND
HOW IT'S PREVENTED
HOW IT'S DIAGNOSED
HOW IT'S TREATED



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

CS302074-A

PREVENT TICKBORNE DISEASES

In people

- Wear insect repellent
- Shower soon after being outdoors
- Check for ticks daily
- See your doctor if you develop fever or rash after a tick bite or tick exposure



www.cdc.gov/ticks




23862A PUBLICATION NUMBER 30045


PREVENT TICKBORNE DISEASES

In pets


- Talk to your veterinarian about tick prevention products
- Run your fingers through your pet's fur to feel for small bumps
- Check your pet for ticks daily



www.cdc.gov/ticks




23862A PUBLICATION NUMBER 30045



PREVENT TICK BITES!

- WEAR REPELLENT
- CHECK FOR TICKS DAILY
- SHOWER SOON AFTER BEING OUTDOORS
- CALL YOUR DOCTOR IF YOU GET A FEVER OR RASH


For more information: www.cdc.gov/ticks



Centers for Disease Control and Prevention
National Center for Emerging and Zoonotic Infectious Diseases


CS27471-A

PREVENT TICKBORNE DISEASES



- Wear repellent
- Check for ticks daily
- Shower soon after being outdoors
- Call your doctor if you get a fever or rash following a tick bite

www.cdc.gov/ticks



CS30350P-A

PREVENGA LAS ENFERMEDADES TRANSMITIDAS POR LAS GARRAPATAS



- Use repelente.
- Revise si tiene garrapatas todos los días.
- Dúchese pronto después de estar al aire libre.
- Llame a su médico si presenta fiebre o sarpullido después de que lo pique una garrapata.

www.cdc.gov/ticks



CS30350P-B

Rocky Mountain Spotted Fever CAN BE DEADLY

Rocky Mountain Spotted Fever

Signs & symptoms

- Fever
- Headache
- Rash
- Stomach pain
- Nausea or vomiting
- Muscle pain
- Lack of appetite




Fever



Headache



Rash

See a doctor if you have any of these symptoms.



PN300485