



CHOCTAW NATION TICK GUIDE

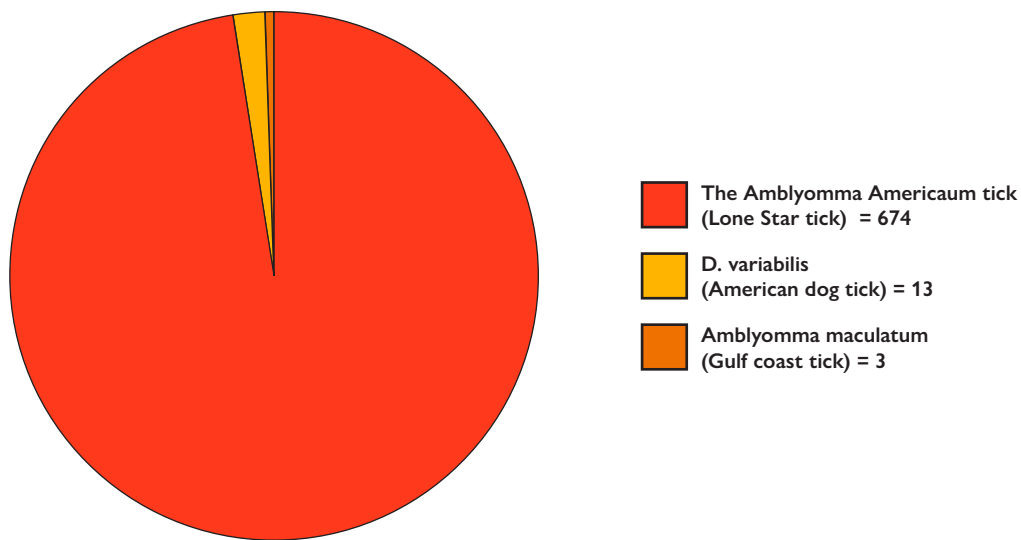
TICKBORNE DISEASE SURVEILLANCE
FINDINGS YEAR 1



Choctaw Nation Public Health

EXECUTIVE SUMMARY

In partnership with Oklahoma State University (OSU) and the Centers for Disease Control and Prevention (CDC), Choctaw Nation Public Health launched the tickborne disease surveillance program in 2024, aiming to identify tickborne disease pathogens of public health significance within Choctaw Nation. CNO Public Health is pleased to release the findings from year one of the tickborne disease surveillance. Ticks were collected from each county within the Choctaw Nation Reservation and analyzed for various pathogens at Oklahoma State University. In 2024, 690 ticks were collected reservation-wide, with the most prevalent tick identified from each county being *Amblyomma americanum*, commonly known as the Lone Star Tick. The lone star tick is associated with numerous tickborne illnesses, including Southern Tick-Associated Rash Illness (STARI), alpha-gal syndrome, Heartland and Bourbon viruses, and *ehrlichiosis*. *A. americanum* ticks have been found within each county of the Choctaw Nation Reservation. Collected ticks were assayed for *Rickettsia*, *Ehrlichia*, and *Borrelia* bacteria.



Disclaimer: Collected ticks were tested for *Rickettsia*, *Ehrlichia*, and *Borrelia* bacteria. Other infectious agents are possible from the species of ticks collected; however, these were not tested for during this 2024 surveillance period. Counties without positive test results are still at risk of contracting tickborne illness and should take adequate precautions. The lack of infectious agents (i.e. bacteria) among collected ticks in certain counties simply indicates that collected specimens did not harbor such bacteria at the time of testing and should not be interpreted as no risk of infection.

TICK SPECIES IDENTIFIED WITHIN CHOCTAW NATION

AMERICAN DOG TICK

Dermacentor variabilis

FOUND

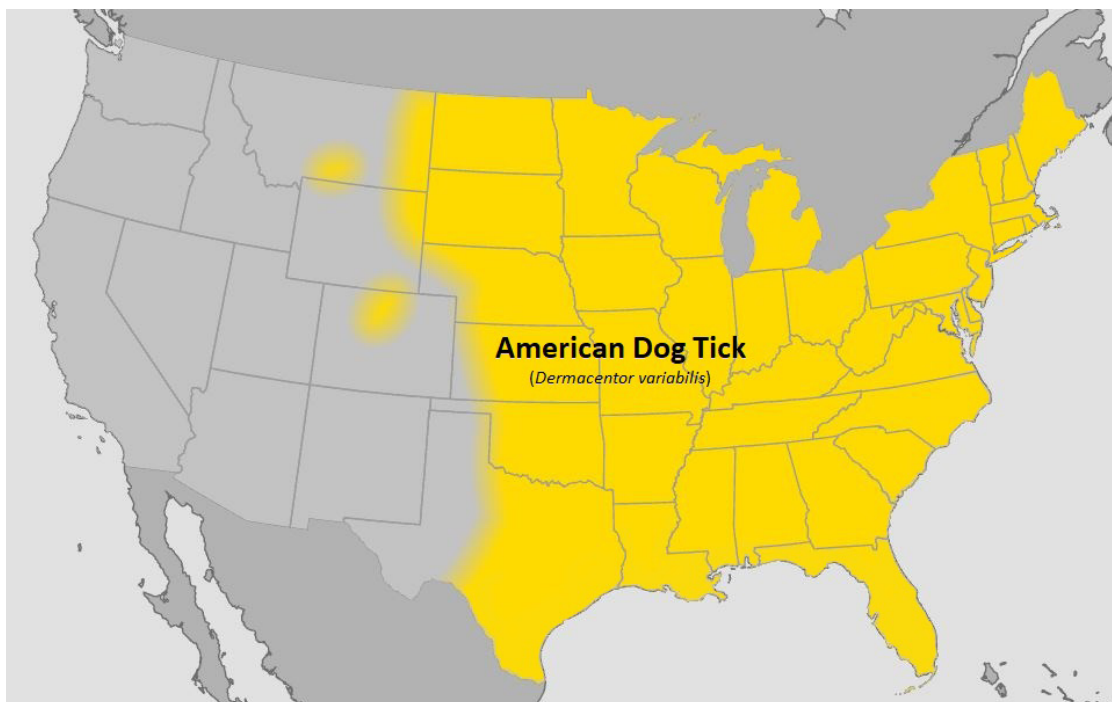
Widely distributed east of the Rocky Mountains and has recently been found west of the Rocky Mountains.

CONDITIONS

Tularemia and Rocky Mountain spotted fever

INFO

Greatest risk of being bit during spring and summer.
Adult females are more likely to bite humans.



GULF COAST TICK

Amblyomma maculatum

FOUND

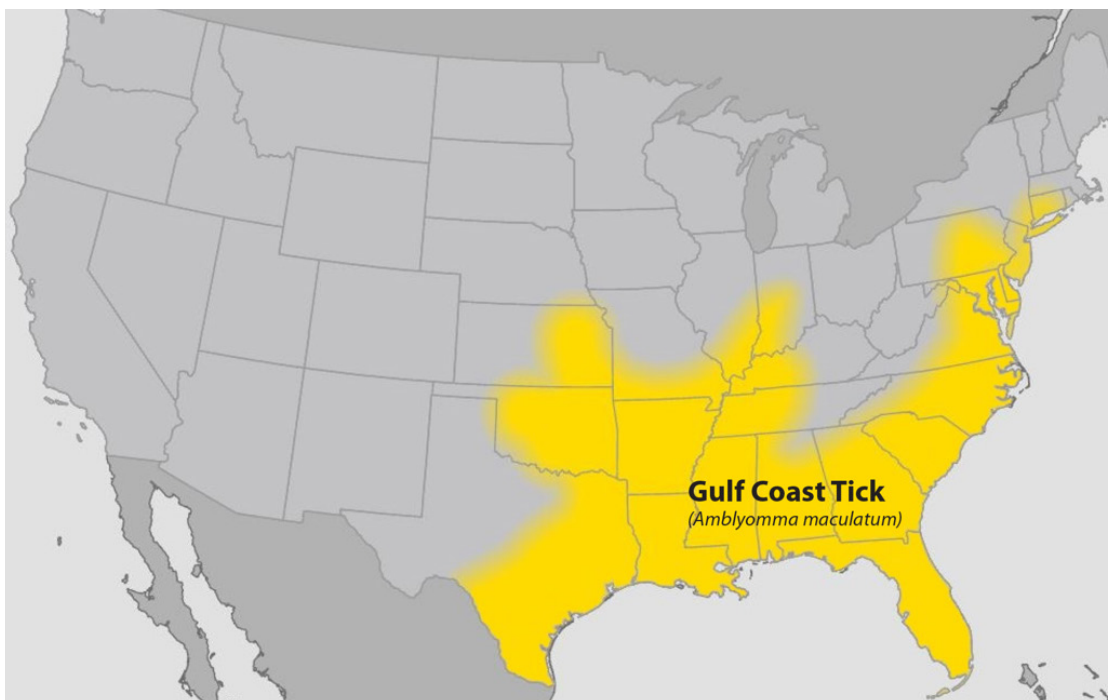
Primarily found in southeastern United States.

CONDITIONS

R. parkeri rickettsiosis (a form of spotted fever)

INFO

Larvae and nymph feed on birds and small rodents, while adults feed on deer and other wildlife. Adult ticks are associated with *R. parkeri* transmission to humans.



LONE STAR TICK

Amblyomma americanum

FOUND

Widely distributed in eastern United States, but more common in southern regions.

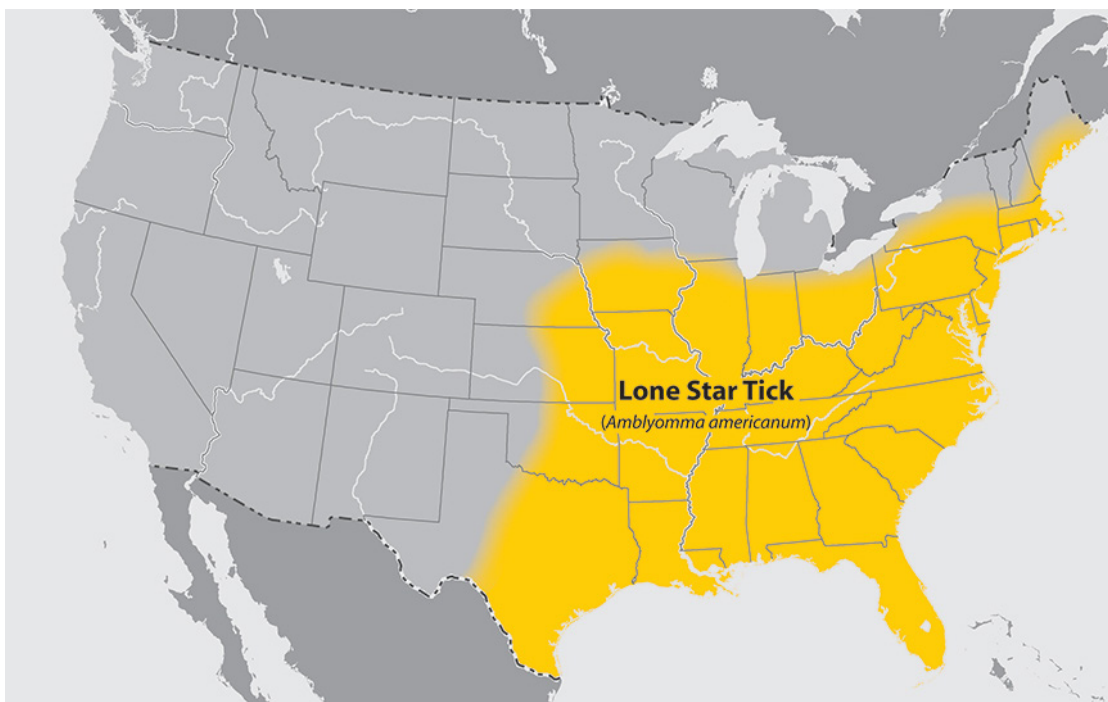
CONDITIONS

Alpha-Gal Syndrome, Human ehrlichiosis, Tularemia, Heartland virus disease, Bourbon virus disease, and Southern tick-associated rash illness (STARI).

INFO

Greater risks of being bit between early spring and late fall. The lone star tick is a very aggressive tick that bites humans.

Adult females distinguishable by a white dot “lone star” on her back. The nymph and adult females most often bite humans. Increasing evidence suggests alpha-gal syndrome (AGS) can be triggered by the bite of lone star ticks.



TICKBORNE DISEASES

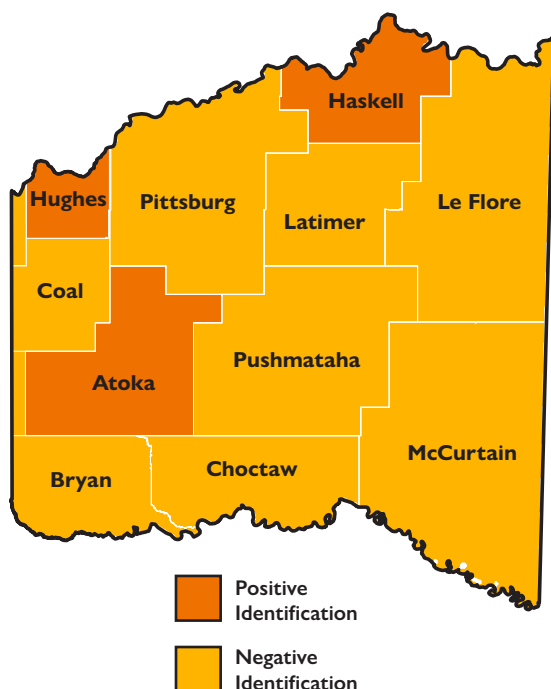
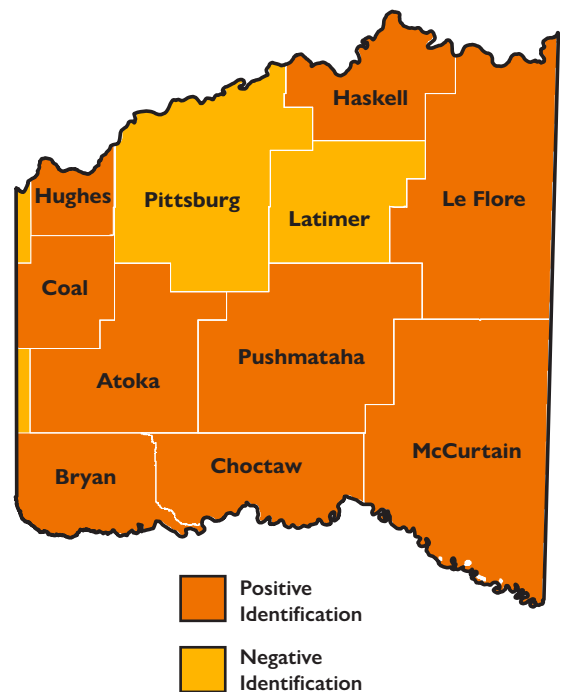
RICKETTSIA - R. AMBLYOMMATIS, (R. AMBY)

Counties with positive pools identified: Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, LeFlore, McCurtain, Pushmataha.

Rickettsia are a group of bacteria that can be transmitted to humans and animals by the bite of ticks, mites, and lice. Some *Rickettsia* species can cause illness in people and animals, while some appear to be harmless. *R. amblyommatis* is related to *Rickettsia rickettsii*, the bacterium that causes Rocky Mountain Spotted Fever (RMSF). *R. amblyommatis* has been detected among Lone Star Ticks within most counties of the Choctaw Nation. While *R. amblyommatis* has not been identified as a human pathogen in the United States, research continues to investigate if this pathogen can cause illness in humans or animals.

Adequate precautions should be taken to prevent *Rickettsial* infections in both humans and animals within each county of the Choctaw Nation. *R. rickettsii*, the bacterium most associated with Rocky Mountain Spotted Fever (RMSF), is commonly spread through bites of infected American Dog Ticks (*Dermacentor* spp.).

Symptoms include: Fevers, headache, rash, nausea, vomiting, stomach pain, muscle pain, and/or lack of appetite.



EHRLICHIA

Counties with positive pools identified: Atoka, Hughes, and Haskell

Ehrlichia is an infectious bacteria responsible for ehrlichiosis. *Ehrlichia* is typically a vector-borne disease, spread through the bite of infected ticks, most often lone star ticks (*Amblyomma americanum*) and the blacklegged tick (*Ixodes scapularis*). Within Choctaw Nation, *Ehrlichia ewingii*, has been detected in lone star ticks collected in Atoka, Hughes, and Haskell counties.

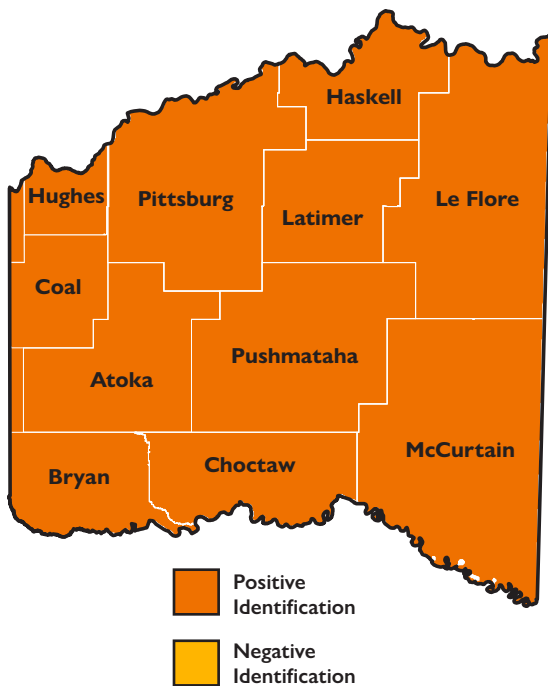
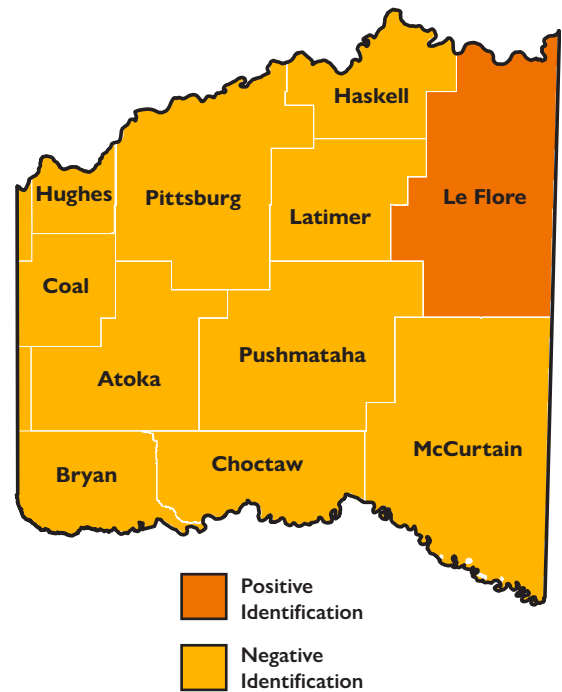
Symptoms include: fevers, chills, headaches, muscle aches, and sometimes upset stomachs.

BORRELIA LONESTARI

Counties with positive pools identified: LeFlore County.

Borrelia lonestari is a bacterium associated with the lone star tick and is believed to cause Southern-Tick Associated Rash Illness (STARI). STARI is characterized by a red, expanding rash lesion that develops around the bite site of a lone star tick. STARI-associated rashes commonly appear within 7 days of the tick bite and expand largely, creating a “bull’s-eye” appearance.

Symptoms include: fatigue, headache, fever, and muscle pains.



ALPHA-GAL SYNDROME*

(aka: **Alpha Gal or Red Meat Allergy**)

Alpha-gal syndrome (AGS) is a serious, potentially life-threatening allergic condition that can develop after a tick bite. Alpha-gal is a molecule found in most mammals, especially red meat products. Symptoms commonly appear after consuming red meat or products containing alpha-gal. The cause of alpha-gal remains under investigation, however, it can affect anyone at any age that has been bitten by a tick. Alpha-gal syndrome is associated with the bite of a lone star tick, however, other ticks have not been ruled out. Lone Star ticks have been identified within each county of the Choctaw Nation Reservation. Current data suggests that the rate of alpha-gal syndrome are higher within the Choctaw Nation Reservation compared to the State of Oklahoma and United States.

Symptoms include: allergic reactions, anaphylaxis, hives, nausea/vomiting, severe stomach pains, drops in blood pressure, swelling of lips, eyes or throat, and/or dizziness and fainting.

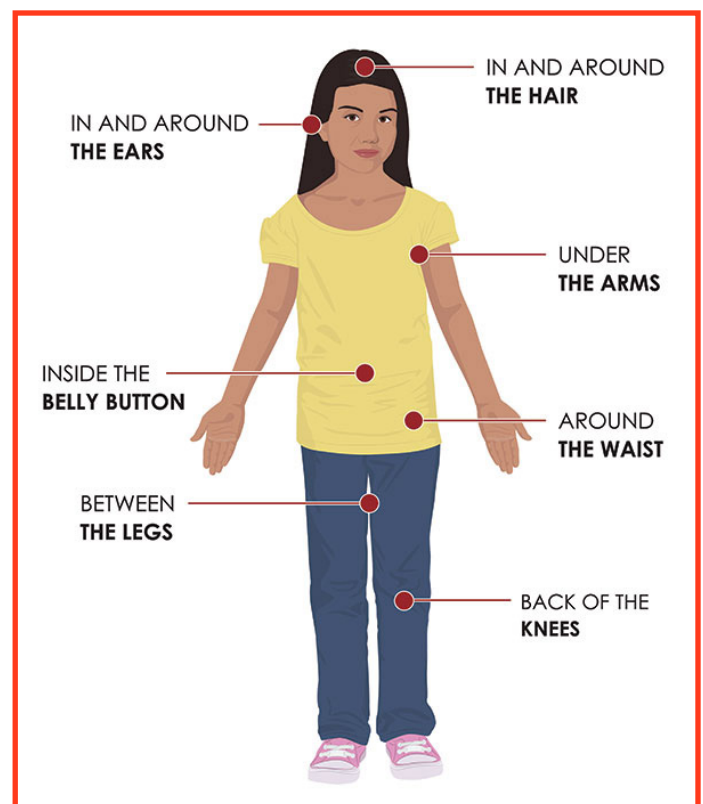
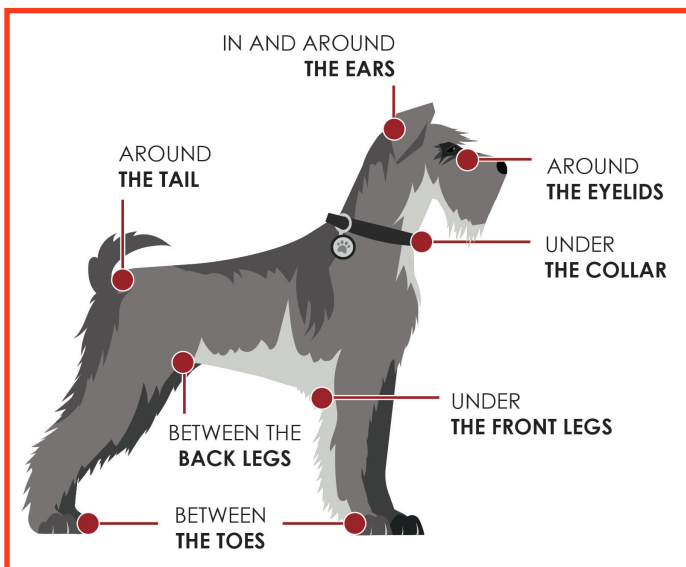
IF YOU EXPERIENCE ANY ALLERGIC REACTION SYMPTOMS THAT APPEAR LIFE THREATENING, CALL 911 OR VISIT YOUR CLOSEST EMERGENCY ROOM.

Thompson JM, Carpenter A, Kersh GJ, Wachs T, Commins SP, Salzer JS. Geographic Distribution of Suspected Alpha-gal Syndrome Cases — United States, January 2017–December 2022. MMWR Morb Mortal Wkly Rep 2023;72:815–820. DOI: <http://dx.doi.org/10.15585/mmwr.mm7230a2>.

*Alpha-Gal Syndrome related data was obtained from the CDC and Viracor Labs. Data portrayed in the above map reflects reactive IgE assay used to assess AGS in individual patients; no data for AGS was obtained by tick collection/analysis.

PREVENTING TICK BITES

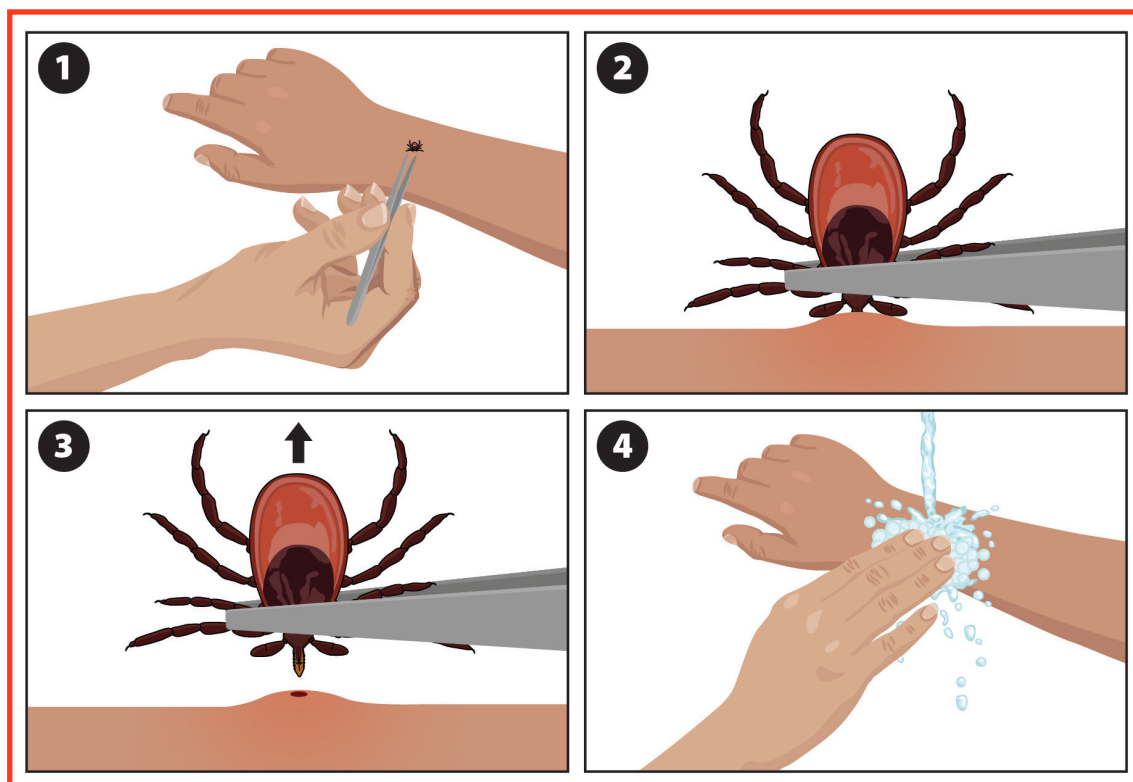
1. Ticks live in grassy, brushy, wooded, and overgrown areas. They can also live on animals. Spending time outdoors while walking your dog, camping, gardening, hunting, or any other outdoor activity could put you into contact with ticks. Ticks are frequently found in yards and neighborhoods as well. Knowing where ticks live is a key step in bite prevention.
2. Use EPA-registered insect repellants containing DEET, picaridin, IR3535, oil of lemon eucalyptus, para-menthane-diol, or 2-undecanone. You can also treat clothes and gear, such as boots, pants, socks, and tents with products containing 0.5 permethrin.
3. Treat pets, such as dogs and cats, for ticks as recommended by a veterinarian.
4. Remember to check for ticks daily, especially under the arms, in and around the ears, inside the belly button, behind the knees, between the legs, around the waist, and on the hairline and scalp. Don't forget to check outdoor pets as well.
5. Shower soon after returning indoors from outdoor activity. Showering is a great time to check your body for ticks.



TICK REMOVAL

If you find a tick attached to your skin, remove the tick as soon as possible. Do not wait to go to a healthcare provider to remove the tick. Delaying tick removal to get help from a healthcare provider could increase your risk of getting a disease spread through tick bites, known as tickborne diseases.

1. Grasp the tick as close to the skin's surface as possible using clean fine-tipped tweezers. If fine-tipped tweezers are not available, use regular tweezers or your fingers to grasp the tick. Grasp the tick close to the skin's surface to avoid squeezing the tick's body.
2. Pull tick away from the skin with steady, even pressure. Don't twist or jerk the tick. This can cause the tick mouthparts to break off and remain in the skin. If this happens, your body will naturally push the mouthparts out over time as your skin heals. You can also remove the mouthparts with tweezers. If you cannot remove the mouthparts easily with tweezers, leave them alone.
3. Dispose of the live tick by taking one of these steps: place it in a sealed container; wrap it tightly in tape; flush it down the toilet; or put it in alcohol. Do not crush the tick with your fingers.
4. After removing the tick, thoroughly clean the bite area and your hands with soap and water, rubbing alcohol, or hand sanitizer.
5. If you find a tick attached to you, there may be other ticks on your body. Do a careful tick check to look for other ticks and promptly remove them.



BE AWARE, PREPARE, AND HAVE FUN!

Being aware of ticks found within the Choctaw Nation Reservation is the first step in preventing tick-bites and tick-borne disease. By recognizing ticks, where they live, and where they may bite, you are preparing yourself to safely enjoy your time outdoors. Remember to always check yourself, your children and pets for ticks after spending time outdoors; and promptly remove any found as soon as possible.

Most tickborne illnesses have similar signs and symptoms.

Most common symptoms associated with tickborne illness includes:

- ◆ Fever/Chills.
- ◆ Aches and Pains: such as headache, fatigue, muscle aches, and sometimes joint pain.
- ◆ Rash: many tickborne related illnesses can cause unique rashes where the tick bite occurred or throughout the skin.

If you suspect that you may have a tickborne related illness, contact your primary care provider, and seek care as soon as possible!