

The background features a textured, parchment-like surface. On the left, there is a faint, detailed illustration of a hot air balloon with a decorative, patterned envelope and a basket. On the right, there is a faint illustration of a blimp or rigid airship with a long, cylindrical envelope and a gondola underneath. The title 'IXODES SCAPULARIS' is centered in large, bold, black, sans-serif capital letters. A thin red horizontal line is positioned below the title.

# IXODES SCAPULARIS

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194B

# GENERAL CHARACTERISTICS

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Adults have ovoid or **pear-shaped** bodies, which become engorged with blood when they feed, and eight legs. In addition to having a hard shield on their dorsal surfaces, hard ticks have a **beak-like structure** at the front containing the mouthparts, whereas **soft** ticks have their mouthparts on the underside of their bodies



# MORPHOLOGY

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- Size: 2.5mm , males smaller than female
- Capitulum: composed of base which carries the mouthparts and pedipalps
- Mouthparts: composed of –
  - a)Hypostome: ventral elongated structure with backwardly directed teeth.
  - b)Chelicerae: two dorsal, with hooked digits and lie in sheath.
- Pedipalps: two, four segmented, lie lateral to the chelicerae
- Ventral Surface: a)4pairs of legs with one tarsal segment & a pair of claws
  - b)The genital pore between the first coxae

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- **Ticks** are **important** to human and veterinary medicine for a variety of reasons: as vectors of bacterial, protozoal, rickettsial, spirochaetal and viral diseases of humans, domestic stock and companion animals.



# GEOGRAPHICAL DISTRIBUTION

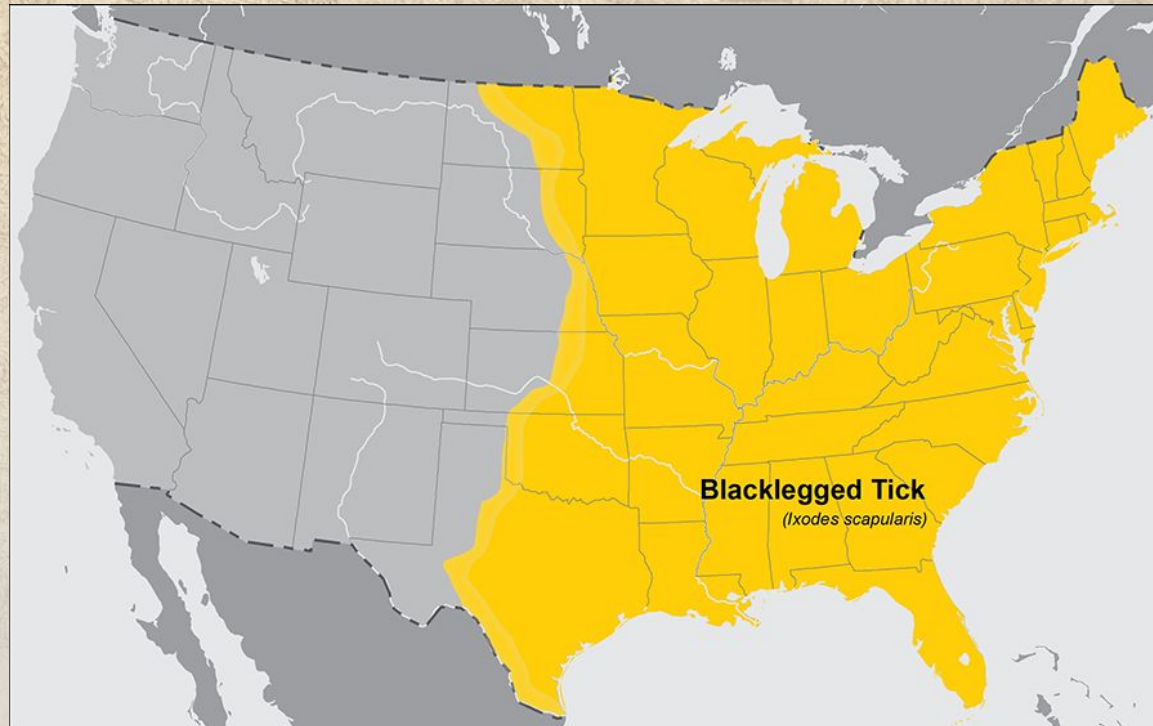
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- Widely distributed across the eastern United States.

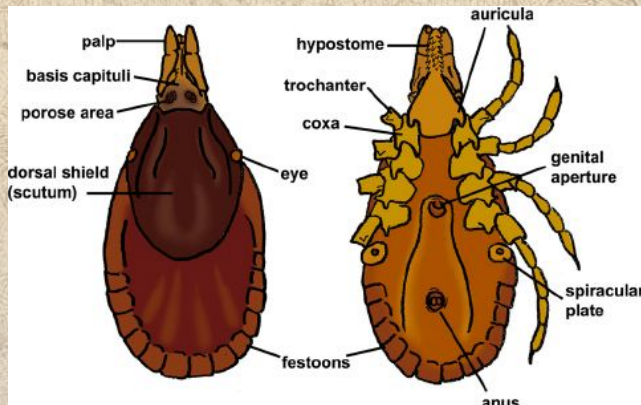
**Transmits:** *Borrelia burgdorferi* and *B. mayonii* (which cause Lyme disease), *Anaplasma phagocytophilum* (anaplasmosis), *B. miyamotoi* disease (a form of relapsing fever), *Ehrlichia muris euclairensis* (ehrlichiosis), *Babesia microti* (babesiosis), and Powassan virus (Powassan virus disease).

# DISTRIBUTION

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# TYPES OF TICKS



**Hard ticks** have a “plate” on their back that is called a scutum. Also, **hard ticks** have mouthparts that are visible when the **tick** is viewed from above. Soft **ticks** appear to have a wrinkled body; lack a scutum; and the males and females are very close to the same size



Soft ticks lack the hard scutum present in the hard ticks (Ixodidae). The gnathosoma (or capitulum, the mouthparts-bearing structure) is located on the underside of the animal's body and is not readily visible; while in the Ixodidae, the gnathosoma projects forward from the body. The lateral edges of the body are rounded.

# LIFE CYCLE

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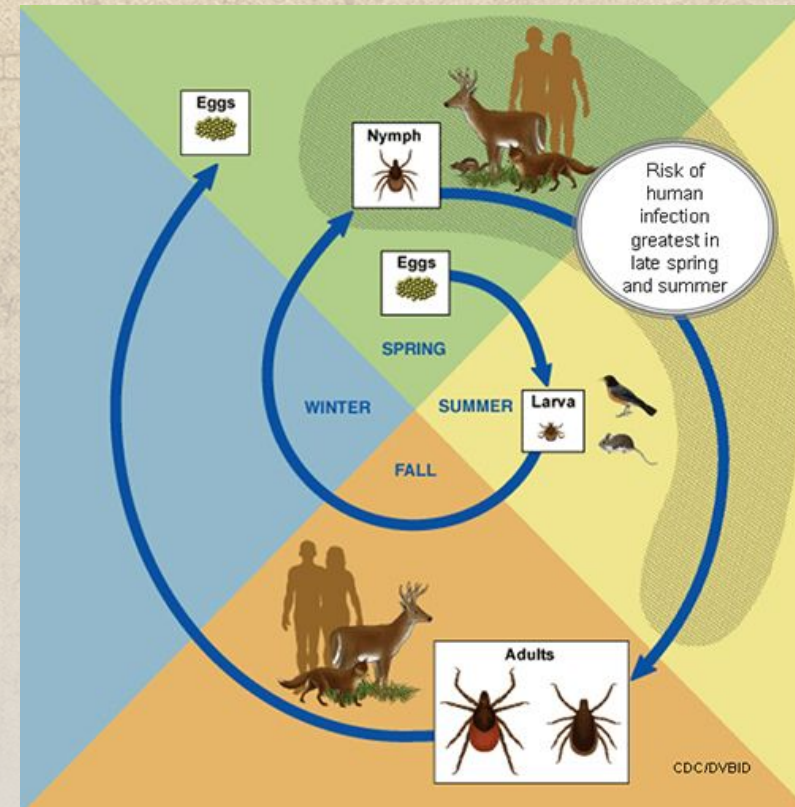


*Ixodes scapularis* has a 2-year lifecycle, during which time it passes through three stages: larva, nymph, and adult. The tick must take a blood meal at each stage before maturing to the next. Deer tick females latch onto a host and drink its blood for 4-5 days. Deer are the preferred host of the deer tick, but it is also known to feed on small rodents. After she is engorged, the tick drops off and overwinters in the leaf litter of the forest floor. The following spring, the female lays several hundred to a few thousand eggs in clusters. Transtadial (between tick stages) passage of *Borrelia burgdorferi* is common. Vertical passage (from mother to egg) of *Borrelia* is uncommon.





1. Egg laid by females
2. Larvae hatches, feed on blood then drop to the ground
3. They moult into nymphs
4. Nymphs feed on blood and moult into adults
5. Adults male and female feed on blood
6. Life cycle takes several months



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# TRANSMISSION

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- The ticks that transmit Lyme disease, a debilitating flulike illness caused by *Borrelia* bacteria, are spreading rapidly across the United States. A new study shows just how rapidly. Over the past 20 years, the two species known to spread the disease to humans have together advanced into half of all the counties in the United State Lyme disease cases have tripled in the United States over the last 2 decades, making it the most commonly reported vector-borne disease in the Northern Hemisphere. The disease now affects around 300,000 Americans each year. If diagnosed early—a rash commonly appears around the site of the tick bite—Lyme can be effectively treated with antibiotics, but longer term infections can produce more serious symptoms, including joint stiffness, brain inflammation, and nerve pain.

# DISEASE CAUSED

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- Lyme disease is the most common vector-borne disease in the United States. Lyme disease is caused by the bacterium *Borrelia burgdorferi* and rarely, *Borrelia mayonii*. It is transmitted to humans through the bite of infected blacklegged ticks.



# SYMPTOMS

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- Fever, chills, headache, fatigue, muscle and joint aches, and swollen lymph nodes
  - Occurs in approximately 70 to 80 percent of infected persons
  - Begins at the site of a tick bite after a delay of 3 to 30 days (average is about 7 days)
  - Expands gradually over several days reaching up to 12 inches or more (30 cm) across
  - May feel warm to the touch but is rarely itchy or painful
  - Sometimes clears as it enlarges, resulting in a target or “bull’s-eye” appearance
  - May appear on any area of the body
  - Does not always appear as a “classic” erythema migrans rash

Headache

Hearing loss and  
paralysis of face

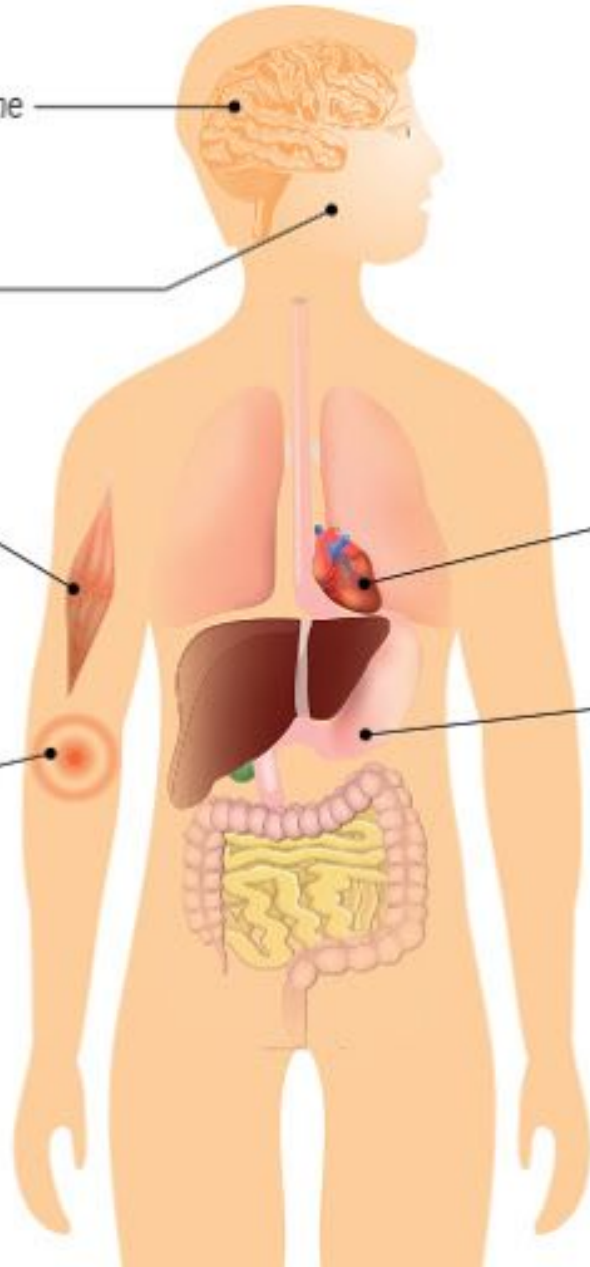
Muscle  
soreness

Erythema  
migrans

Fever  
Chills  
Fatigue  
Weakness

Heart  
complications

Nausea  
and vomiting



# DIAGNOSIS

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- Most Lyme disease tests are designed to detect antibodies made by the body in response to infection.
- Antibodies can take several weeks to develop, so patients may test negative if infected only recently.
- Antibodies normally persist in the blood for months or even years after the infection is gone; therefore, the test cannot be used to determine cure.
- Infection with other diseases, including some tickborne diseases, or some viral, bacterial, or autoimmune diseases, can result in false positive test results.
- Some tests give results for two types of antibody, IgM and IgG. Positive IgM results should be disregarded if the patient has been ill for more than 30 days.

# LABORATORY TEST

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- Some laboratories offer Lyme disease testing using assays whose accuracy and clinical usefulness have not been adequately established. Examples of unvalidated tests include:
- Capture assays for antigens in urine
- Culture, immunofluorescence staining, or cell sorting of cell wall-deficient or cystic forms of *B.burgdorferi*
- Lymphocyte transformation tests
- Quantitative CD57 lymphocyte assays
- “Reverse Western blots”
- In-house criteria for interpretation of immunoblot
- Measurements of antibodies in joint fluid (synovial fluid)



# TREATMENT

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- People treated with appropriate antibiotics in the early stages of Lyme disease usually recover rapidly and completely. Antibiotics commonly used for oral treatment include doxycycline, amoxicillin, or cefuroxime axetil. People with certain neurological or cardiac forms of illness may require intravenous treatment with antibiotics such as ceftriaxone or penicillin.





# PREVENTION AND CONTROL

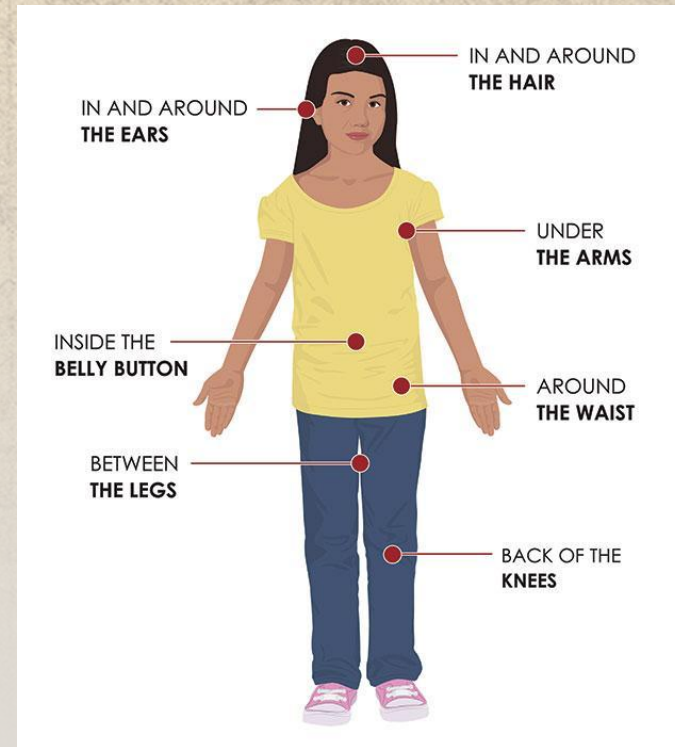
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- Reducing exposure to ticks is the best defense against Lyme disease, Rocky Mountain spotted fever, and other tickborne infections. You and your family can take several steps to prevent and control Lyme disease:
- [On people](#)
- [On pets](#)
- [In the yard](#)
- [Lyme disease vaccine](#)

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• **Check your body for ticks after being outdoors.** Conduct a full body check upon return from potentially tick-infested areas, including your own backyard. Use a hand-held or full-length mirror to view all parts of your body. Check these parts of your body and your child's body for ticks:

- Under the arms
- In and around the ears
- Inside belly button
- Back of the knees
- In and around the hair
- Between the legs
- Around the waist



# INFORMATIVE VIDEOS

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- <https://youtu.be/0CotiX0WJ4g>
- [https://youtu.be/0g\\_l0FcQag](https://youtu.be/0g_l0FcQag)
- <https://www.youtube.com/watch?v=0oODJG4Xpz8>

Thank  
you

