

Ticks and Tick Borne Disease Awareness

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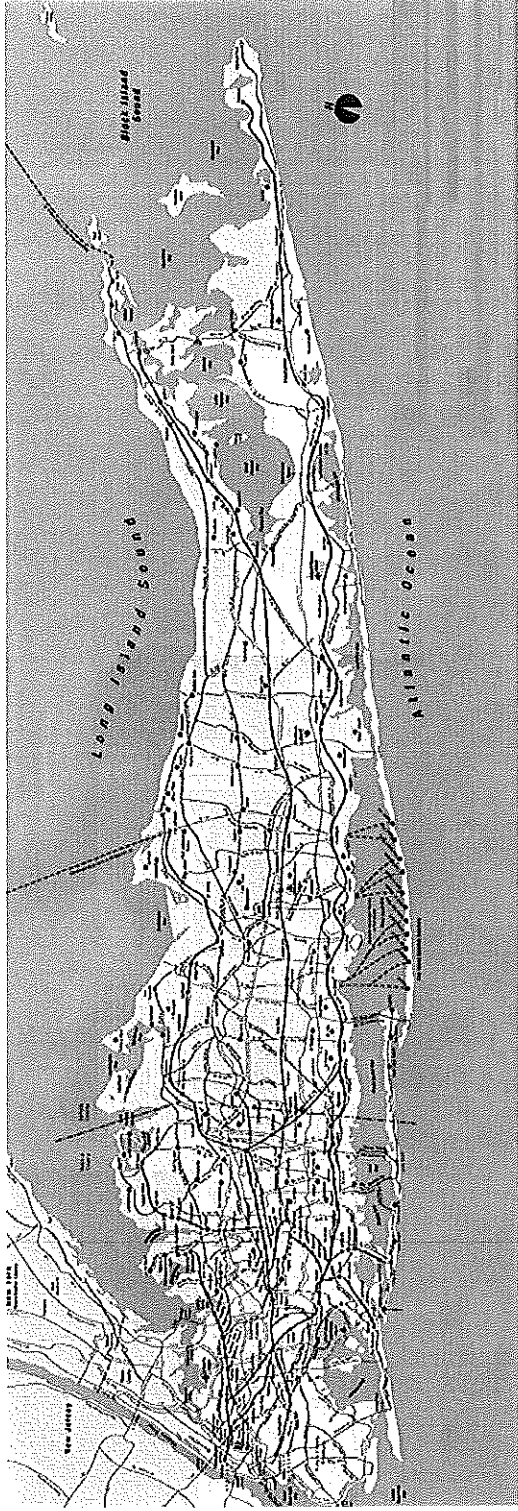
BROOKHAVEN
NATIONAL LABORATORY

a passion for discovery

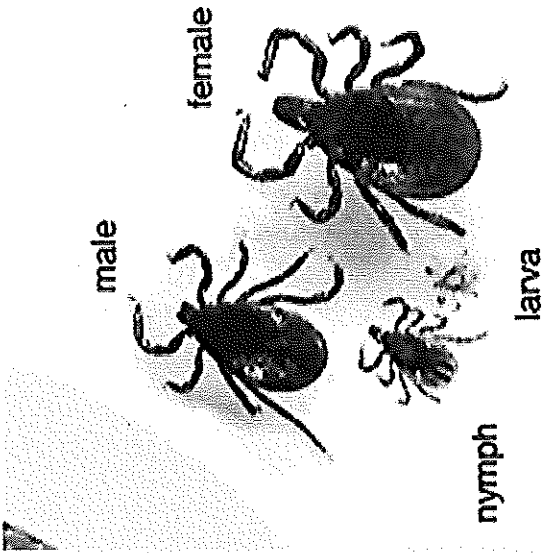
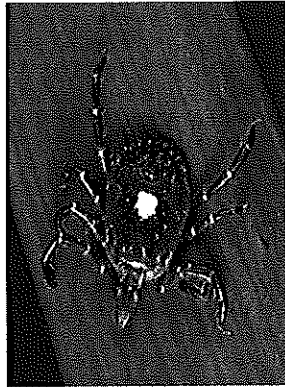


Why Worry about Tick Bites?

- Long Island's climate and terrain support a thriving and year-round tick population.
- There is an increased risk of Lyme and other tick borne diseases
- Suffolk County has one of the highest Lyme disease case rates in the United States



And During Summer, We Need to Worry about larval ticks!



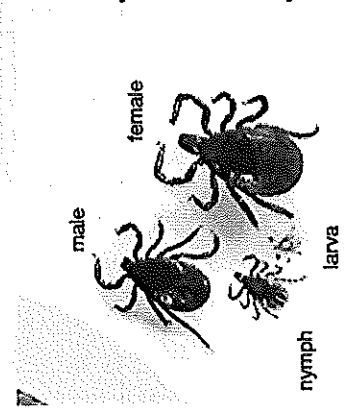
Larval ticks, especially larval lone-star ticks are an added concern during the summer months.

Larval ticks are not known to carry diseases, but their bite causes intense itching. Infection from scratching can result.

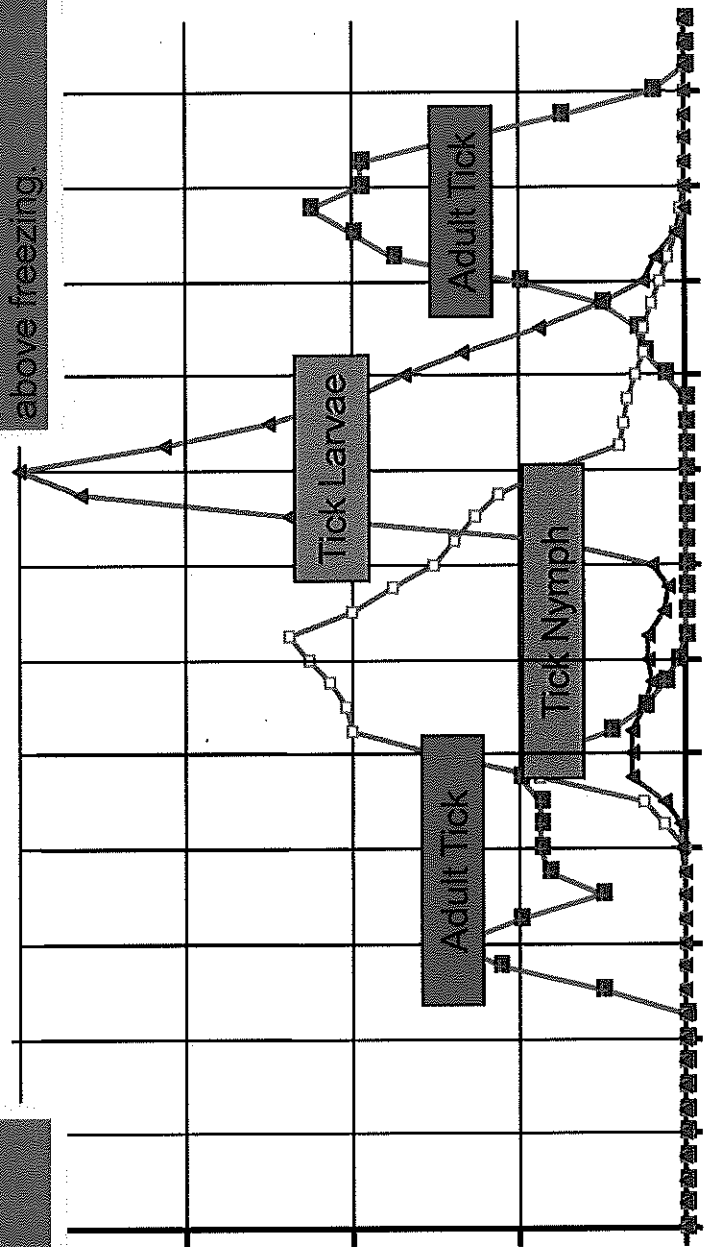
SEASONAL TICK ALERT

Ticks - Most active spring through late fall. Nymphs and adult stages pose a risk to humans. Larval stages do not pose a risk other than severe itching.

Black-legged(deer) ticks - Are also active in the winter when temperatures are above freezing.



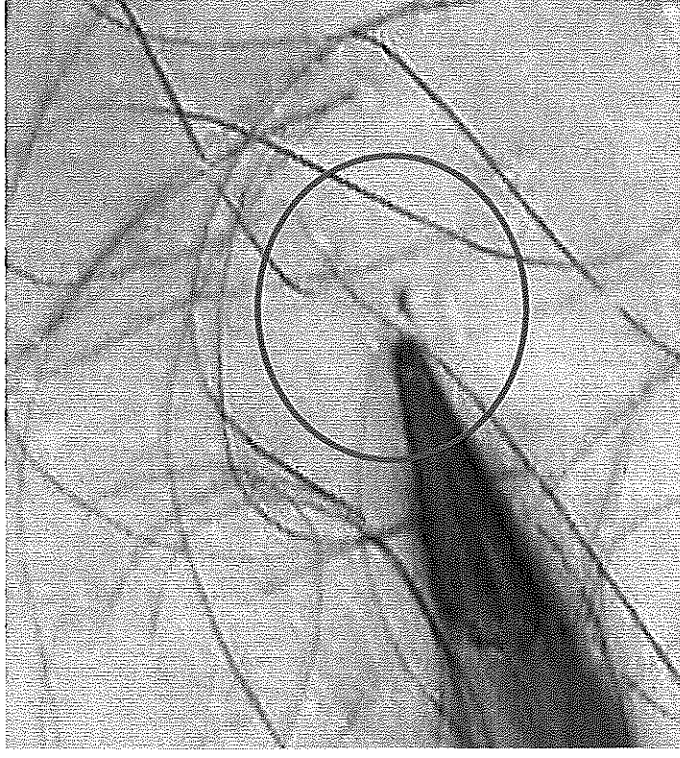
Activity Level



J F M A M J J A S O N D

Though tick nymphs and adults may infect humans with disease and larval ticks do not, the same protective methods are used against both because of their similarities.

- Ticks at all life stages live in the same type of habitat—tall weeds and grass.
- Ticks crawl onto people in search of a location to bite.
- Ticks, especially larval ticks, can be very small, so you must be vigilant to protect yourself.



The size of a larval tick is smaller than a pencil tip.

Risk Reduction Avoid Tick Habitat

- Ticks are typically found in tall weeds, long grass and wooded areas
- Avoid overgrown and wooded areas, whenever possible
- Lone star ticks are also found in leaf litter, even if it is located on trails



Reduction of potential skin exposure

If you must be in areas where ticks are likely to be found, reduce the potential for ticks to come in contact with your skin.

1. Wear light colored long pants, socks, and long sleeves
2. Wear plastic booties, over boots, or Tyvek[®]-type Suit
3. If possible, purchase InsectShield[®] clothing or treat clothing with a permethrin based pesticide.



Tucking your pants in your socks reduces potential for bites by preventing skin contact.

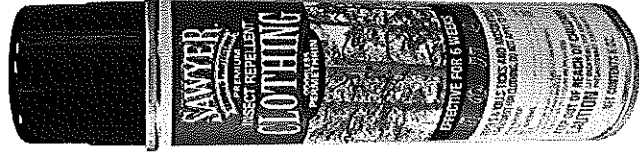
Risk Reduction

Use Approved Insecticides for Best Protection

- Use of insecticides is one way to reduce risk outdoors
- Kills ticks and other insects
- Permethrin based insecticide should be sprayed on clothing only

It should not be applied to skin

- Spray Permethrin on clothing /shoes/inside shoes prior to outdoor exposure and let dry
- **Permethrin is for clothing only**



Follow all manufacturer's instructions for use.

Insecticides can cause allergic reaction and irritation to eyes and skin if misused.

Risk Reduction Use Approved Repellents

- Use repellents that contain 20% or more DEET (N, N-diethyl-m- toluamide) on the exposed skin for protection that lasts up to several hours.
- Apply this product on your skin, avoiding hands, eyes, and mouth
- Always follow product instructions.

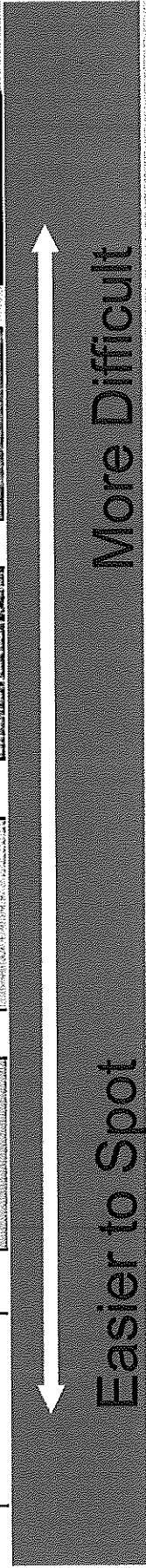
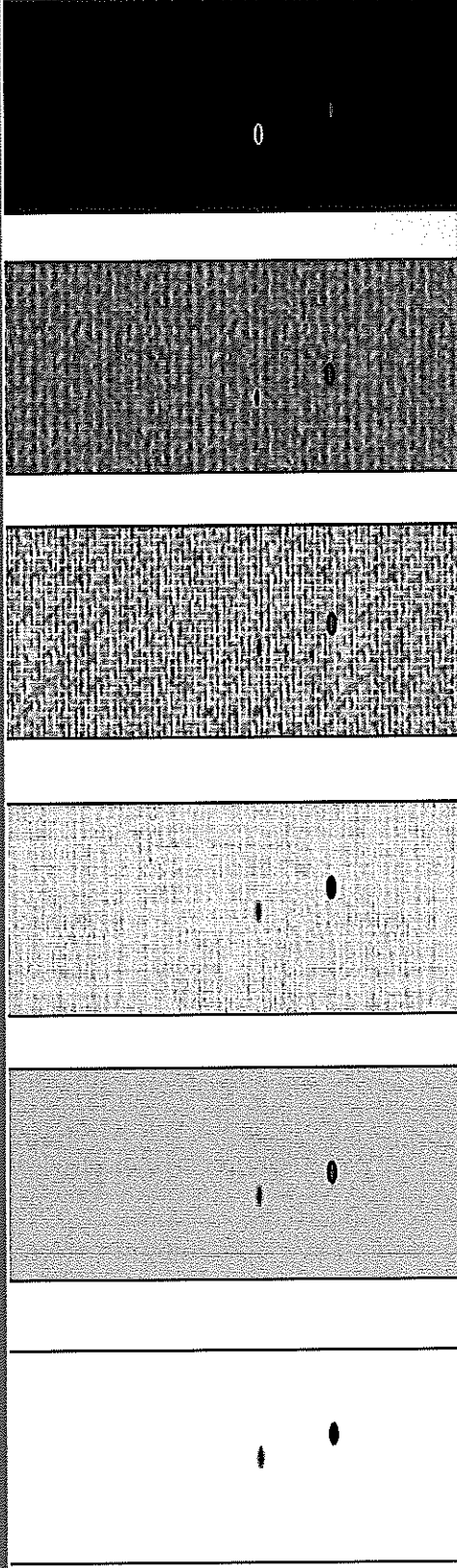


Risk Reduction

Check Clothes for Ticks

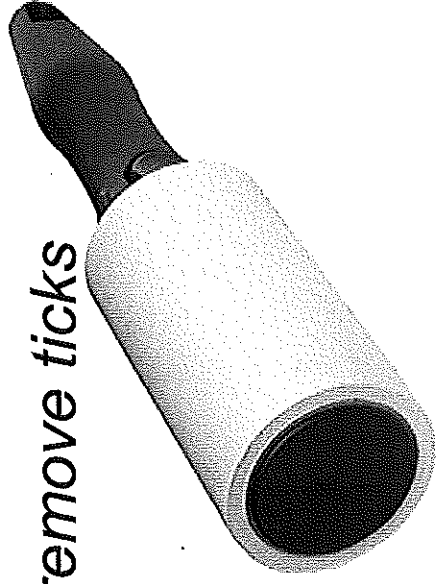
Check clothes every two hours of outdoor activity and remove ticks before they can make contact with your skin.

Light-colored clothes will enable you to spot ticks.



Removing Ticks From Clothing

- *Before ,during, and after working in the field, examine skin and clothing*
- *Use wide tape or a lint roller to remove ticks*

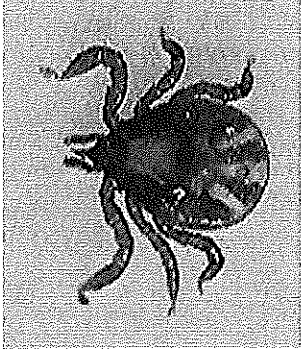


RISK REDUCTION INSPECTION

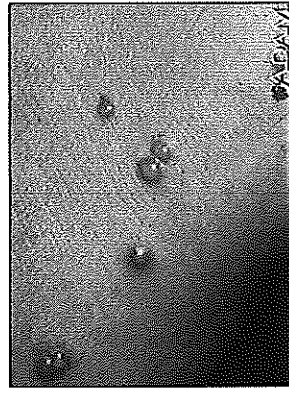


- Remove clothing and shower within 1-2 hrs. after possible exposure
- Thorough inspection of entire body (especially alert to underarm, crook of arm, head, and groin area)
- Larval ticks are commonly found around ankles, behind knees, or at the waistline
- Clothing should be washed and dried immediately to prevent ticks from moving into living spaces.
- Placing clothing in the dryer on high heat for 40 minutes will kill ticks.

LARVAL TICK BITES



- Larval feeding causes intense itching
- Reddened area or blister may appear within 24hrs of attachment
- After feeding, larval ticks drop off the body
- Delayed hypersensitivity reaction can cause persistent itching



Larval tick bites produce a hardened, red welt which begins to itch intensely within 24-48 hours after being bitten.

LARVAL TICK BITE TREATMENT

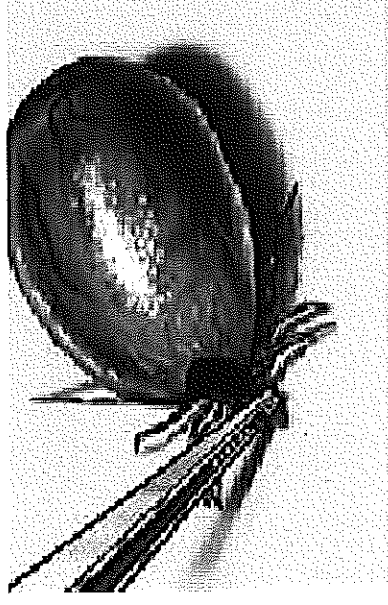
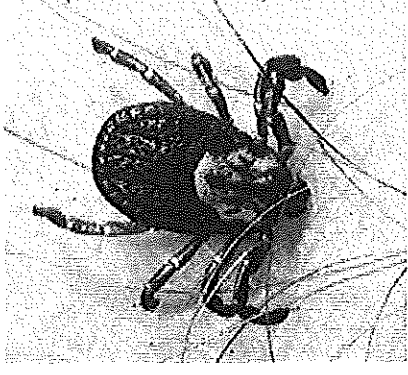
STEPS TO REDUCE DISCOMFORT



- Don't scratch
- Keep your fingernails short and hands clean to reduce infection
- Consider topical hydrocortisone, antihistamine or a local anesthetic to reduce itching
- Consult your physician or pharmacist regarding treatment
- Avoid household remedies
- If redness, swelling or fever develop contact your physician

If You Find An Attached Tick

- Don't panic (< 2% of tick bites result in Lyme disease)
- Remove the tick immediately by using tweezers.
- Pull on the head (where the tick is attached to skin)
- Disinfect the area



If You Find An Attached Tick

Do Not

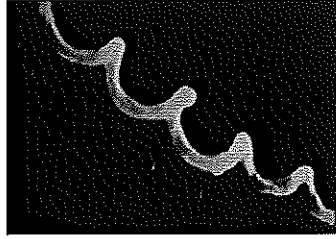
- Burn ticks with a match
- Coat with nail polish remover
- Coat with petroleum jelly
- Squeeze the body of a tick
- Wait until the tick falls off



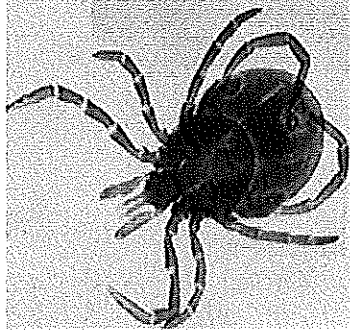
These methods may actually increase your chance of bacterial infection.

Tick Bites - How Infections Occur

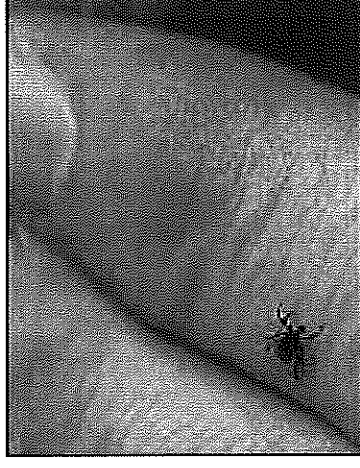
- Tick-borne diseases are caused by bacteria (or protozoan) spread by the bite of an infected tick.
- In the case of Lyme disease, it is the bite of an infected black-legged tick (deer tick).
- Ticks need to be attached for at least 24 hours before they can transmit Lyme disease



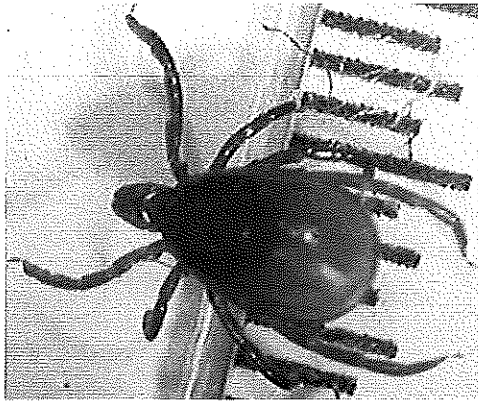
Lyme Disease
Bacteria (spirochete)



deer tick

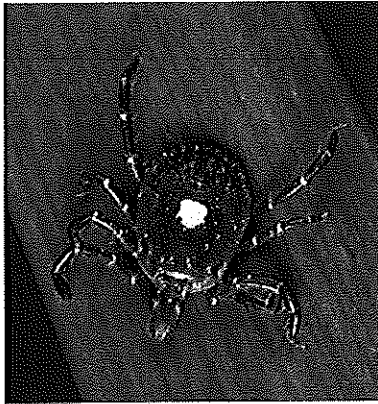


Common Tick-borne Diseases on Long Island



TYPE OF TICK	DISEASES <small>Click on link to learn more</small>	ORGANISMS	TYPE OF ORGANISM
DEER TICK (Black-legged) <i>Ixodes scapularis</i>	Lyme disease	<i>Borrelia burgdorferi</i>	Spirochete
	Anaplasmosis	<i>Anaplasma phagocytophilum</i>	Bacterium
	Babesiosis	<i>Babesia microti</i>	Microscopic protozoan parasite

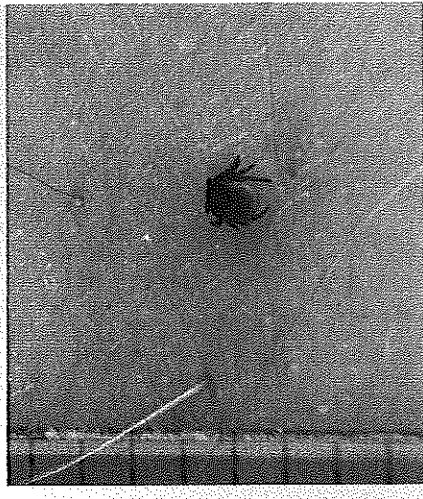
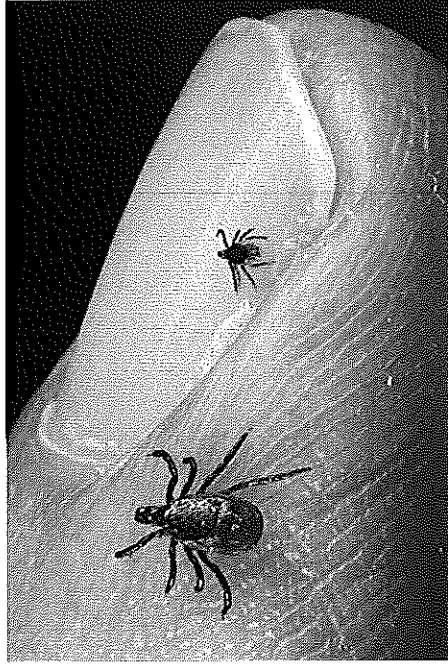
Common Tick-borne Diseases on Long Island



TYPE OF TICK	DISEASES	ORGANISMS	TYPE OF ORGANISM
Lone-star Tick <i>Amblyomma americanum</i>	Click on link to learn more Ehrlichiosis	<i>Ehrlichia</i> spp.	Rickettsia bacteria
	STARI (Southern Tick-Associated Rash Illness)	<i>Borrelia lonestari</i>	Spirochete

SYMPTOM RECOGNITION

- Outdoor workers should be aware of the symptoms of tick borne diseases
- Early recognition and treatment will result in positive health outcomes
- Most often individuals can't recall having been bitten by a tick

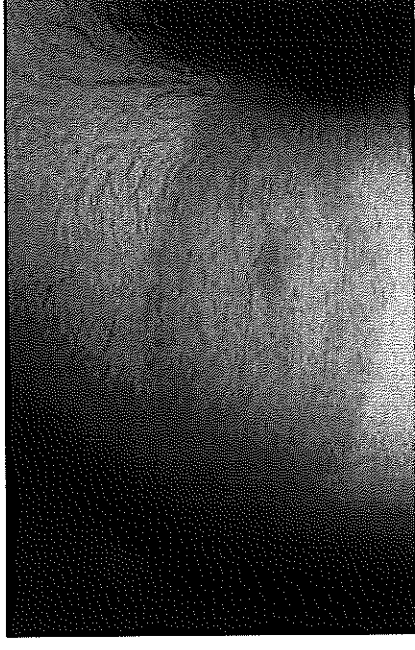


Lyme Disease Symptoms

Lyme disease symptoms affect the skin, joints, nervous system, and heart

Early localized stage (3-30 days post-tick bite)

- A reddish rash may appear near the site of the bite. In some cases, multiple rash sites appear.
- Chills, fever, headache, fatigue, stiff neck, muscle soreness, joint pain, and swollen lymph nodes.



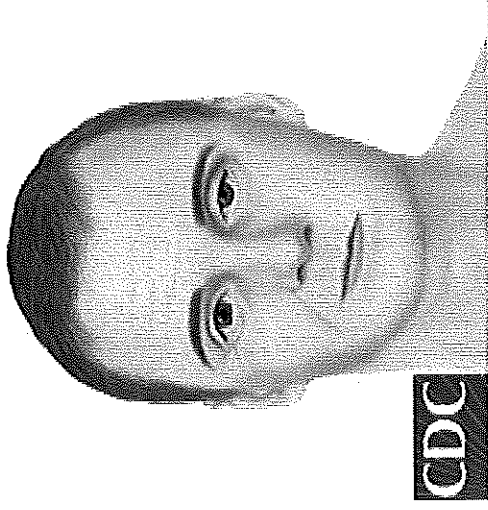
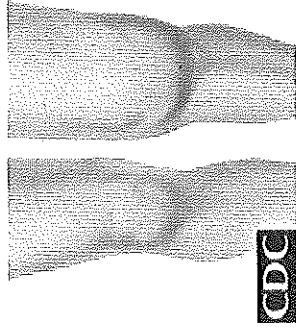
Lyme disease "bull's-eye" rash (EM- Erythema Migrans) that may appear with infection. Seek treatment immediately if rash appears.

Lyme Disease Symptoms

Early disseminated stage (days to weeks post-tick bite)

Untreated, the infection may spread to other parts of the body

- Facial or Bell's palsy (loss of muscle tone on one or both sides of the face)
- Headaches and neck stiffness due to meningitis (inflammation of the spinal cord)
- Arthritis
- Sleep disturbance
- Palpitations



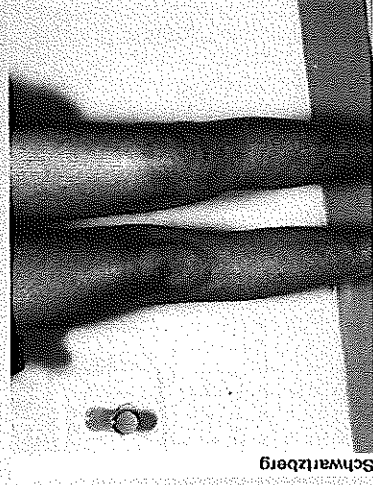
These symptoms will resolve over a period of weeks to months, even without treatment, but lack of treatment can result in additional complications.

Lyme Disease Symptoms

Late disseminated stage (months-to-years post-tick bite)

- Approximately 60% of patients with untreated infection may have intermittent bouts of arthritis
- Up to 5% of untreated patients may develop chronic neurological complaints
- 10-20% of patients with Lyme disease have symptoms that last years after treatment with antibiotics

(Post-treatment Lyme disease syndrome (PTLDS)-autoimmune reaction



LYME DISEASE TESTING

Lyme disease is diagnosed based on:

- Signs and symptoms
- History of possible exposure to infected black-legged ticks
- Laboratory blood tests are helpful if used correctly and performed with validated methods
- Laboratory tests are not recommended for patients who do not have symptoms typical of Lyme disease
- **Testing a tick for Lyme disease does not predict transmission of disease**
- Contact your physician for early testing and treatment

Lyme Disease Prophylaxis

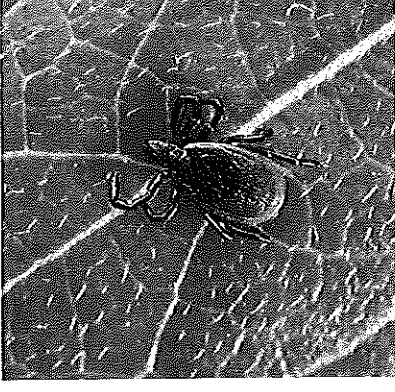
- If a **deer tick (black-legged)** has been attached to you for 36 hours or more (usually engorged with blood), a single dose of Doxycycline given within 72 hours may reduce your risk of getting **Lyme disease**
- Doxycycline prophylaxis is **not indicated after a bite by a different tick** and has not been shown to prevent any other diseases

LYME DISEASE TREATMENT

- Patients 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
- Patients with certain neurological or cardiac forms of illness may require intravenous treatment with drugs such as ceftriaxone or penicillin

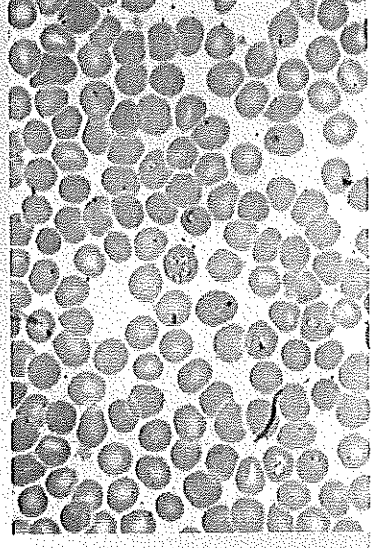
Babesiosis

- Babesiosis is an illness that results from a parasite (*Babesia microti*) & is transmitted by the bite of the deer tick or from blood transfusions
- Tick-borne transmission primarily occurs in the Northeast and upper Midwest (US ~1,200 cases, NYS ~30% as of 2011)
- Many people have no symptoms; if symptomatic, may have a flu-like illness. It may rarely cause destruction of red blood cells and anemia
- Babesiosis can cause severe illness in the elderly, in persons with no spleen and those who have compromised immune systems.
- People with no symptoms do not require treatment; Consult your doctor. Treatment available if symptomatic.



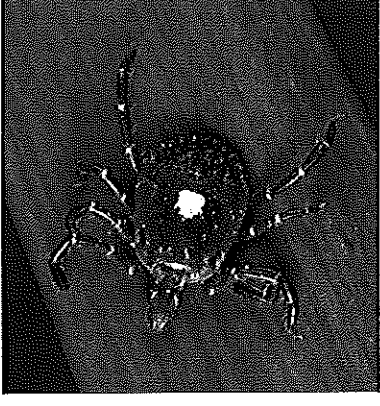
Babesiosis is caused by the deer tick.

Typically *B. microti* is transmitted by the nymphal stage of the black-legged tick



Ehrlichiosis

- Ehrlichiosis is caused by bacteria transmitted by the bite of the lone star tick or from blood transfusions
- Incidence is 1 to 3.3 cases per million persons in NYS(2011)-rare
- Symptoms develop within 2 weeks after a tick bite - Fever, headache, fatigue, and muscle aches. 30% of adults may present with a rash.
- It is diagnosed based on symptoms, clinical presentation, and later confirmed with specialized laboratory tests
- Immune-compromised individuals may have more severe outcomes
- Consult your physician. Doxycycline is the first line treatment.



Ehrlichia species
transmitted by the
Lone Star Tick

Symptoms and Response

- **Fever/chills:** With all tick-borne diseases, patients can experience fever at varying degrees and time of onset.
- **Rash:** Lyme disease, southern tick-associated rash illness (STARI), Rocky Mountain spotted fever (RMSF), and Ehrlichiosis, can result in distinctive rashes

<http://www.cdc.gov/ticks/symptoms.html>

TAKE AWAY MESSAGES

- ~ *If you have been bitten by a tick and develop symptoms within a few weeks, contact your health care provider*
- ~ *Early diagnosis and treatment are key to a full recovery.*

The 4-Poster

- Too early to determine effectiveness
- All 14 devices are being used at some level
- Cameras at each device take pictures
 - Number of pictures have ranged from 200 - more than 6000 every two weeks.
 - Deer, raccoons, squirrels, and turkey are usually captured in picture.
 - Many pictures just from miscellaneous movement and nothing present.



4-Poster

- Devices checked twice weekly
- Corn use is at about 1,000 lbs/week
- Rollers are recharged with permethrin based on corn consumption.
- Summer Intern
 - Sort and interpret photos
 - Conduct tick survey
 - Compile corn and pesticide use data
 - Prepare short report for future comparison

