

# RUTGERS COOPERATIVE EXTENSION

NEW JERSEY AGRICULTURAL EXPERIMENT STATION

## Protect Yourself from Ticks and Lyme Disease



**Female Deer Tick**  
enlarged to show detail



**Female Lone Star Tick**  
enlarged to show detail

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County Agricultural Agent, Ocean County

### Introduction

Lyme disease is caused by a bacterium transmitted by the deer tick,\* *Ixodes scapularis*. The deer tick is found in high grassy areas, open fields, and in woods with a shrubby understory.

Ticks live in the shrubby understory of the forest. Ticks do not jump or fly—they wait on vegetation for an animal to brush against them. They then attach to the animal and insert their mouth parts (without burrowing beneath the skin). Following a blood meal, the tick swells to twice its normal size, and drops to the ground.

### Description and Life Cycle

After hatching from an egg in late spring, the deer tick goes through three life stages: larva, nymph, and adult. Each stage requires a different host animal and feeds only once. Deer ticks take two years to complete their life cycle.

**Larvae -** are very small (about the size of a pin head) and tan. They feed in late summer, near ground level, on mice, shrews, chipmunks, voles, and other small animals. Larvae can pick up the disease from an infected animal. **Peak activity: August.**



*actual size*

**Nymphs -** are the size of a poppy seed. They are beige, sometimes appearing transparent with a dark head. Nymphs feed from May through August on larger animals; including birds, racoons, opossum, squirrels, cats, dogs—and human beings. **Peak activity: late May-June.**

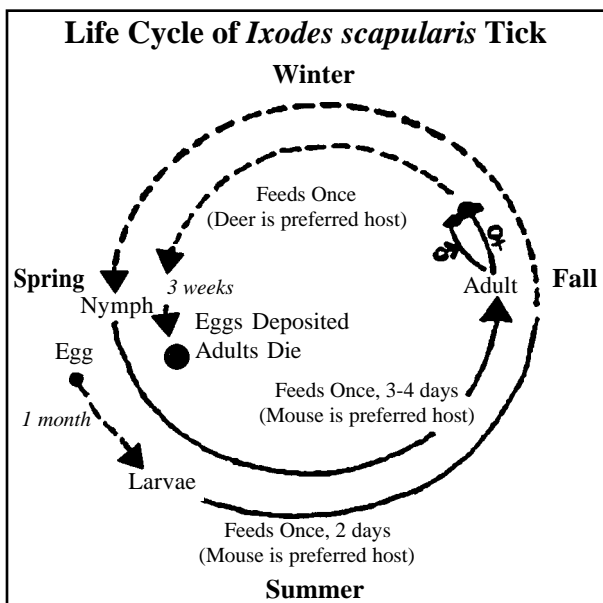


*actual size*

**Adults -** are the size of a sesame seed. Males are black; females have a brick-red abdomen and a black shield near the head. Females swell to 1/4 inch when fully engorged after feeding. Adults are active all winter long, as long as temperatures are above freezing. Adults feed primarily on deer, but will also attack cattle, horses, dogs, etc. Human beings are accidental hosts. **Peak activity: October/November.**



*actual size*



\*The deer tick is now known as the black-legged tick.

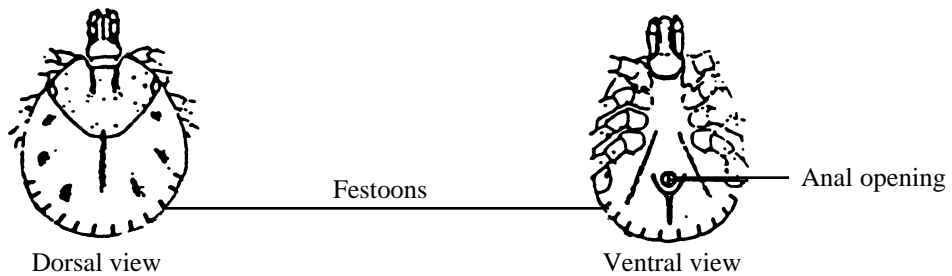
## Tick Identification

All ticks go through three growth stages (larva, nymph, adult) which differ in size. All stages have distinctive features that separate tick species. The following drawings are greatly enlarged to show characteristics used for identification of hard ticks:

**Festoons**—ridges on the edge of the lower abdomen. Deer ticks do not have festoons. Other common ticks do have festoons.

**Anal Opening**—looks like a navel on the ventral side of a tick. It tends to be in the center of the body of most ticks. On the deer tick, the anal opening is near the lower edge of the abdomen AND is surrounded by a horseshoe-shaped ridge.

### A. Ticks that are not primarily vectors of Lyme disease



### B. Deer tick (spreads Lyme disease)



## Other Common Ticks

(greatly enlarged drawings of adult females)

Lone Star Tick  
*Amblyomma americanum*



American Dog Tick  
*Dermacentor variabilis*



Brown Dog Tick  
*Rhipicephalus sanguineus*



*Secondary vector of Lyme Disease*

## Ticks: Disease Cycle

The risk of being bitten by an infected deer tick is greatest in the summer months, especially in May and June, when the nymph stage is active. This is the time of year when people, notably children, are most active outdoors. Make a habit of thoroughly checking yourself and others for the tiny nymph after outdoor activities and vacations.

About 25 to 50 percent of the deer ticks in New Jersey (depending on where they are found) are infected with and able to transmit Lyme disease. Newly hatched deer ticks do not initially carry this disease; they pick it up from an infected animal. The white-footed mouse is the primary carrier of the Lyme disease bacterium. Once a tick picks up the bacterium, it will retain it to its next stage, and be able to infect future host animals.

Research indicates that a tick must feed for at least 24 hours to transmit the disease bacterium.

## Know the Early Signs of Lyme Disease

- Headache
- Flulike symptoms
- “Bull’s-eye” rash (> 2" in diameter)
- Swelling and pain in the joints

Lyme disease symptoms mimic many other diseases. About 70 percent of Lyme disease victims will develop a rash within two days to four weeks. If untreated, more severe symptoms may develop—sometimes months to years later.

If you suspect Lyme disease, consult a physician **immediately**. Symptoms that progress very quickly could be the result of Ehrlichiosis (H.G.E.), another tick-borne disease.

## Tick Removal

If you find a tick on your body, remove it **AS SOON AS POSSIBLE**. Use tweezers **ONLY**. Bent “needle nose” tweezers work best. Do **NOT** use nail polish, vaseline, matches, or other methods (the latter procedures may traumatize the tick and cause it to regurgitate its gut contents). Grasp the tick with tweezers around its head, close to the skin. Pull it up and out **slowly** and **firmly**. Disinfect the bite afterward with antiseptic.

Save the live tick for identification by the RUTGERS COOPERATIVE EXTENSION office in your county.

## Tick Prevention

### 1. *Avoiding ticks outdoors*

- Avoid tall grass and shrubby areas.
- Wear long pants tucked into socks.
- Wear light-colored clothing (to help locate ticks easily).
- Stay close to the center of hiking trails (avoid brushing against vegetation).
- Thin out low shrub vegetation in woods.
- Keep turfgrass mowed.
- Remove brush piles (it serves as animal nesting sites).

### 2. *Use a repellent*

- Apply to shoes, socks, and pants, and allow to dry: (1) **PERMETHRIN (Permanone, Duranon)**—kills ticks on contact—labeled for clothing **only**, it will last through two or three washings. (2) **N,N-Diethyl-meta-toluamide**, commonly known as **DEET** (“Off,” “Cutter,” “Muskol,” etc.)—repels ticks; labeled for skin or clothing.

*CAUTION: Certain people are sensitive to formulations of DEET that contain more than 50% active ingredient.*

### 3. *Pesticide Control*

- “DAMMINIX” is a product that provides insecticide-laced nesting material to mice. It kills immature ticks attached to mice in their burrows.
- If ticks are present, treat edge areas where turfgrass and the woods meet, and 12 feet into the woods to create a protective barrier.
- Insecticides applied periodically can help to reduce tick populations. **READ AND FOLLOW ALL PRECAUTIONS AND DIRECTIONS ON THE INSECTICIDE LABEL**. Some insecticides labeled for tick control include: **DURSBAN** (chlorpyrifos), **DIAZINON** (spectracide), **SEVIN** (carbaryl), and **TEMPO** (cyfluthrin)\*

Note: (a) GRANULAR insecticides provide superior control of immature ticks. One application the last week of May provides season-long control. Research shows 90 to 95% control of nymphs with one properly applied treatment at this time.

(b) LIQUID insecticides provide good control of **adult** ticks. Apply in November and/or March. Spray vegetation to runoff.

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\* This insecticide is for use **only** by professional applicators.

For more information, contact:

*Rutgers Cooperative Extension office in your county or your local health department.*

## Rutgers Cooperative Extension County Offices

<b>Atlantic</b>	6260 Old Harding Highway, Mays Landing, NJ 08330-1533	609-625-0056
<b>Bergen</b>	327 Ridgewood Avenue, Paramus, NJ 07652-4896	201-599-6162
<b>Burlington</b>	Office: 122 High Street Mail: 49 Rancocas Road, Mt. Holly, NJ 08060-1317	609-265-5050
<b>Camden</b>	152 Ohio Avenue, Clementon, NJ 08821-4184	609-784-1001
<b>Cape May</b>	4 Moore Road, Cape May Court House, NJ 08210-1601	609-465-5115
<b>Cumberland</b>	Extenson Education Center, 291 Morton Avenue, Millville, NJ 08332-9776	609-451-2800
<b>Essex</b>	115 Clifton Avenue, Newark, NJ 07104	973-481-5302 *
<b>Gloucester</b>	County Building, Delsea Drive, Clayton NJ 08312-1095	609-863-0110
<b>Hunterdon</b>	4 Gauntt Place (off Route 31), Flemington, NJ 08822-9058	908-788-1339
<b>Mercer</b>	930 Spruce Street, Trenton, NJ 08648-4584	609-989-6830
<b>Middlesex</b>	390 George Street (8th Floor), New Brunswick, NJ 08901-2018	732-745-3446
<b>Monmouth</b>	20 Court Street, Freehold, NJ 07728-1702	732-431-7260
<b>Morris</b>	Office: Building 550, West Hanover Avenue, Morris Township Mail: P.O. Box 900, Morristown, NJ 07963-0900	973-285-8300 *
<b>Ocean</b>	Extension Center, 1623 Whitesville Road, Toms River, NJ 08755-1199	732-349-1246
<b>Passaic</b>	1310 Route 23 North, Wayne, NJ 07470	973-305-5742 *
<b>Salem</b>	51 Cherry Road, Suite 1, Woodstown NJ 08098-9982	609-769-0090
<b>Somerset</b>	310 Milltown Road, Bridgewater, NJ 08807-3587	908-526-6644
<b>Sussex</b>	3 High Street, First Floor, Newton NJ 07860-9115	973-579-0985 *
<b>Union</b>	300 North Avenue East, Westfield, NJ 07090-1499	908-654-9854
<b>Warren</b>	Admin. Bldg., 165 County Rd., Route 519S, Belvidere, NJ 07823-1949	908-475-6505

\* Effective June 28, 1997. Prior to this date, use the 201 area code.

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### Ticks and Lyme Disease HOTLINE Numbers

**New Jersey Department of Health**  
800-792-8831

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**Jersey Shore Medical Center - Lyme Resource Center**  
201-776-4455

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**National Lyme Borreliosis Foundation - Connecticut**  
203-871-2900

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**Lyme Disease Foundation**  
800-886-LYME

• • • • •

**Lyme Disease Network Newsletter**  
908-390-5027

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RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY  
NEW BRUNSWICK**