

A TICK-LIST FOR BIRDERS: UPDATE ON LYME DISEASE

by Dorothy R. Arvidson

How many people do you know with Lyme Disease? In New England, chances are pretty good that you know one or two. Among my friends in the Northeast, five are victims of this plague, as are two in Wisconsin. All of them are birders or field biologists. For three of them, the disease has been sufficiently disabling to require a change in life-style or a change of profession—which is what prompts me to write this article.

The best protection against Lyme disease is to be informed. Four readable articles are "At the Drop of a Tick" in *Science News*, March 25, 1989 (135/12: 184-7); "Watch out for the tick attack" in *Consumer Reports*, June 1988 (54/6: 382-5); "Lyme Disease and the Birder" in *Bird Observer*, April 1988 (16/2: 83-4); and "Lyme Disease" in *Scientific American*, July 1987 (257/1: 78-83).

Prevalence. Lyme disease first surfaced in the United States in 1975 as an arthritis epidemic affecting thirty-nine children and twelve adults living in heavily wooded areas around Lyme, Connecticut. A Yale epidemiologist, Dr. Allen C. Steere, was asked by health officials to investigate, and the subsequent events constitute a fascinating piece of medical detection (see *Scientific American* reference above). Steere established that Lyme arthritis was not contagious but was spread by the bite of a tick, *Ixodes dammini*, and was probably the same disease as a tick-transmitted rash known as ECM (erythema chronicum migrans) that had plagued Europe for nearly a century, for which no causative agent had been found. Nor could any disease organisms be found in the joint fluids of Lyme patients or in the cell cultures of *I. dammini*. In 1981, researchers in New York investigating a death from Rocky Mountain Spotted Fever sent, by accident, some *I. dammini* ticks to an authority on tickborne disease, Willy Burgdorfer, at Rocky Mountain Laboratories in Montana. Burgdorfer isolated from the digestive tracts of these ticks a spirochete (similar to the one responsible for syphilis), which was cultured by Alan G. Barbour in the same labs. By 1984 further research confirmed the connection between the spirochete, the tick, and Lyme disease. The newly discovered bacterium was named in Willy's honor, *Borrelia burgdorferi*.

By 1988, Lyme disease had increased tenfold in the United States, with five thousand new cases that year. The disease has been found in forty-three states, and 90% of the cases have occurred in eight states (CA, CT, MA, MI, NJ, NY, RI, and WI). It is known throughout Europe and has been reported in Australia, the Soviet Union, China, Japan, and Africa. A number of different *Ixodid* tick species, all of them tiny, blood-sucking ectoparasites, can carry the Lyme disease spirochetes in their digestive tracts and inject the bacteria via their

tubular mouthparts into the hosts they parasitize. The hosts include a variety of mammals—field mice, voles, cats, dogs, horses, cattle, deer, and man—and birds. In New England the predominant hosts are white-tailed deer for the adult tick and white-footed mice for the larval and nymphal stages.

Present medical research is investigating how the spirochete produces its diverse and profound effects in people, how to control the exploding tick population, and is searching for a vaccine against the spirochete or the tick.

What is Lyme disease like? In New England the disease starts with the bite of a spirochete-carrying tick, *I. dammini*, commonly called the deer tick, which is most active in spring and summer. However, because of its minute size, the tick and the bite may go unnoticed. Hence, the first sign that you have the disease is a "bull's eye rash." This temporary rash begins as a red elevated dot on the skin at the location of the bite, surrounded within two to thirty-two days by an expanding red rash that spreads outward to form a round or oval reddened area two or three inches across (sometimes much larger and often with a pale center). Other early symptoms are flu-like: profound fatigue, stiff neck, headache, chills, fever, and muscle aches. Unfortunately, even the rash may not be noticed or occasionally may not develop, but you should take seriously flu-like symptoms that occur during the summer and seek medical help. And don't hesitate to express to the doctor your concern about any exposure to ticks.

If undiagnosed or untreated, a second stage of the disease occurs weeks or months later in which cardiac problems and neurological symptoms may develop, symptoms such as palpitations, shortness of breath, severe headache, facial paralysis, or encephalitis. These often disappear within a week or two. In the third stage of Lyme disease, severe chronic neurological problems may occur in untreated patients, with about half developing arthritis, commonly in the knees. In some, the arthritis becomes chronic with degenerative changes.

Diagnosis and treatment. There is as yet no certain way of diagnosing Lyme disease. A blood test for antibodies is unreliable until six weeks after the tick has infected you. Antibiotics are used to treat all stages of the disease but are most effective when used early.

What is the tick like? The adult deer tick is tiny, pale, and about the size of a sesame seed. The immature stages, larvae and nymphs, are smaller than the adults. The ticks take only one blood meal in each stage, and all can carry the Lyme disease spirochetes. Ticks remain attached to the host for several days or longer when feeding but eventually drop off. When not on a host, the larvae and nymphs are present in vegetation close to the ground, and the adults climb up on bushes to about a meter above the ground. Deer ticks are prolific (each female lays 2500 eggs), can go for long periods without feeding, and can survive New England winters but do not tolerate desiccation. Hence, they are found in moist areas. In the Northeast the adults parasitize chiefly deer and the immature ticks,

mostly field mice. It is the nymphal ticks in the grass and low bushes that are most apt to attach themselves to the feet and legs of people.

Suggested precautions. In the Northeast, 80-90% of deer ticks carry Lyme disease spirochetes and are present in grassland, woodland, and marshland as well as in parks and suburban lawns that are frequented by deer. Mid-April to October is as good for ticks as it is for birders. Here are ways to reduce the risk.

✓ Keep a clothing barrier between you and the ticks. Wear socks and shoes (not sandals), long sleeves, and pants cinched at the ankles or tucked inside your socks. It is easier to find ticks on light-colored clothes than on dark.

✓ Inspect your clothing at intervals. Brush off the ticks out-of-doors, that is, before you get in the car or enter the house.

✓ Use tick repellent on clothing (to avoid skin reactions), at least from the knees down. *Permanone*, a repellent not widely available and not for use on skin, contains permethrin that kills ticks on contact. Deet or N,N-diethyl-metaltoluamide, the active agent in products like *Off*, does not kill ticks but does repel them. Strong solutions of deet applied to clothing work best. Use tick-repellent collars on your pets to avoid ticks entering the house by that means.

✓ Stay in the middle of the trail; avoid tall grass and bushes.

✓ When you undress, check for ticks, which crawl about on the skin for several hours before attaching. Deer ticks are tiny, but their motion may catch your eye. Once they attach and expand with blood, they are more visible.

✓ Be careful when removing attached ticks. Assume that every deer tick you meet carries Lyme disease spirochetes. Do not squeeze or rupture ticks engorged with blood. This might pump spirochetes into the wound or spread them into breaks in your skin. Remove ticks using thin, curved forceps (available at pharmacies or ask the druggist to order them). Slide the forceps underneath the tick, gently pull it away, discard it without handling it, and disinfect the bite area. Lyme-disease researchers who are often bitten when collecting ticks in the field attribute their success in avoiding the disease to the use of curved forceps and prompt removal of ticks. Carry forceps, disinfectant, and repellent in your pack. There is apparently a period of a few hours after the tick starts its blood meal before the spirochetes pass into the host. The sooner the tick is removed, the less the chance of infection.

✓ Monitor any tick bites for several weeks. Be alert for the development of a rash or flu-like symptoms so that antibiotics can be given immediately.

Birders, take heart. Although it truly does seem to be "a jungle out there," the rewards and joys of birding more than compensate for making a few modifications of behavior and attire.

BIRD WATCHER'S GENERAL STORE

"Cape Cod's Shop for Bird Lovers"



FEATURING: *The Amazing "AVIARIUM" Birdfeeder* that brings birds right into your own home. The feeder is made of mirrored plexi-glass that allows you to watch the birds for hours, but they cannot see you.

COME SEE IT IN ACTION!

Other Bird Lover Items Include:

- Bird Mugs
- Bird Pillows
- Bird Tiles
- Bird Silkscreens
- Bird Thermometers
- Bird Towels
- Bird Placemats
- Bird Sun Catchers
- Bird Mobiles
- Bird Slates
- Bird Clocks
- Bird Wallets
- Bird Prints
- Bird Notecards
- Bird Switchplates
- Bird Stamps
- Bird Coat Racks
- Bird T-Shirts
- Bird Photos
- Bird Carving Kits
- Bird Key Chains
- Bird Jewelry
- Bird Recordings
- Bird Calls
- Bird Door Knockers
- Bird Baths
- Bird Paintings
- Bird Houses
- Bird Giftwrap
- Bird Posters
- Bird Calendars
- Bird Books
- Bird Field Guides
- Bird Glasses
- Bird Bath Heaters
- Bird Fountains
- Bird Telephone
- Bird Floor Mats
- Bird Bookmarks
- Bird Pot Holders

Complete line of Binoculars, spotting scopes and tripods.

PLUS over 50 different types of bird feeders including Bluejay and Squirrel-proof feeders that work, **GUARANTEED**. Plus ten different types of Bird Seed.

GIFT CERTIFICATES & U.P.S. SHIPPING.

BIRD WATCHER'S GENERAL STORE

255-6974

37 Route 6A, Orleans (Across from Lobster Claw)

OPEN YEAR ROUND