

Lyme Disease Town Hall Meeting

*Hosted by Supervisor Herrity
and Supervisor Frey*

Centreville High School
6001 Union Mill Road
Clifton, VA 20124



Agenda

- Supervisor Pat Herrity: Opening Remarks and Introduction
- Presentation by Dr. Jorge Arias of the Fairfax County Disease Carrying Insects Program: Ticks and How to Protect Yourself.
- Presentation by Vicky Monroe, Fairfax County Wildlife Biologist: Lyme Disease: Culprits, Solutions, What You Can Do, and What the County is Doing.
- Presentation by Debbie McCabe, Physician and Director of Pediatric and Family Wellness at the National Integrated Health Associates: Lyme... The Great Imitator.
- Presentation by Monte Skall, Executive Director of The National Capital Lyme and Tick-Borne Disease Association: The National Capital Lyme and Tick-Borne Disease Association – A Place to Turn to.
- Presentation by Dan Scandling, Chief of Staff, Congressman Frank Wolf's office: Update on the Federal Government's Role.
- Q&A from the Audience

Supervisor Pat Herrity

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Lyme Disease

I How I can Protect myself and my Family

Lyme Disease Town Hall Meeting

Sponsored by

Supervisors Frey and Herrity

Jorge R. Arias, Ph.D.

Fairfax County Health Department

July 22nd, 2009



What is it?

What can I do?

Ticks



Tick Facts

- All ticks are bloodsucking parasites
- **Second** only to mosquitoes as vectors of disease in the world, number one in the US
- Require a host animal for food and development
- Single bite can transmit multiple pathogens

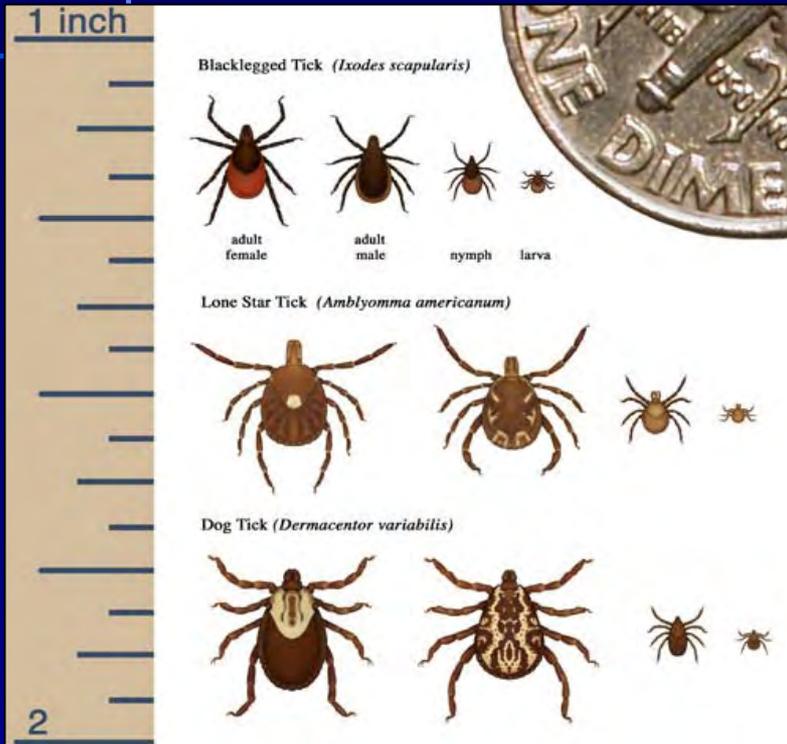
The Waiting Game

- Ticks climb up grass and plants and hold their legs up "sensing" and "looking" for their prey
- They are sensitive to carbon dioxide and movement-signals that a host is nearby
- Their grasping forelegs allow them to climb on a host



1. Although 15 species of ticks occur in Virginia, only the **blacklegged tick** (also known as the deer tick) is a vector of Lyme disease.
2. Among the three tick species that most commonly bite humans in Virginia , the **blacklegged tick** is the least common species.

Tick Species



Lone Star Tick



Dog Tick



Black-legged (Deer) Tick



**These ticks are found in
Fairfax County**

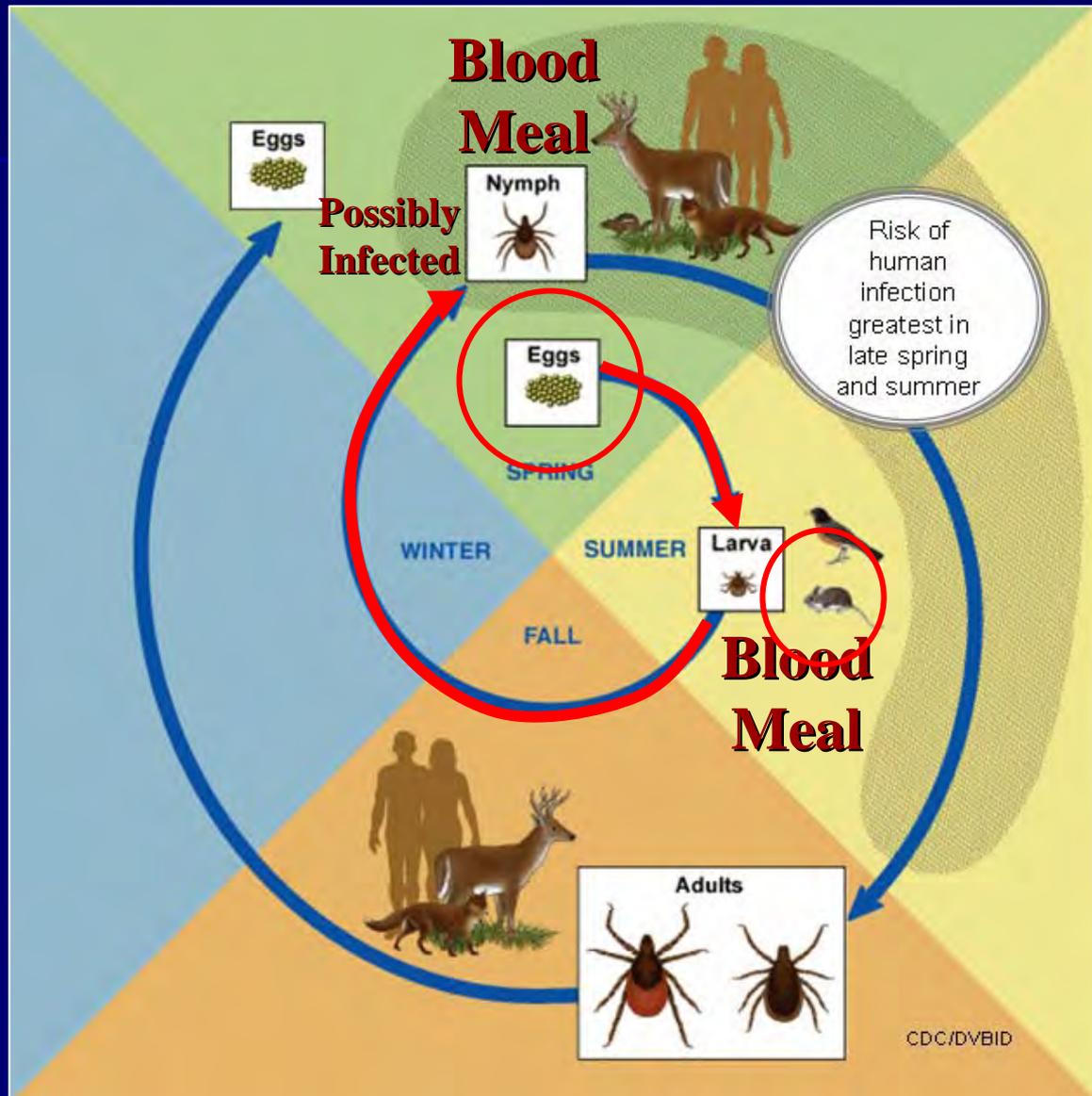
Tick Life Cycle

Adult blacklegged ticks lay eggs in the Spring

Larval ticks hatch from eggs in summer & feed on rodents or birds

Larval ticks become infected with the Lyme disease agent (*Borrelia burgorferi*) mainly by feeding on infected white-footed mice

After a blood meal, larval ticks hibernate through the fall and winter & become nymphal stage ticks the following spring

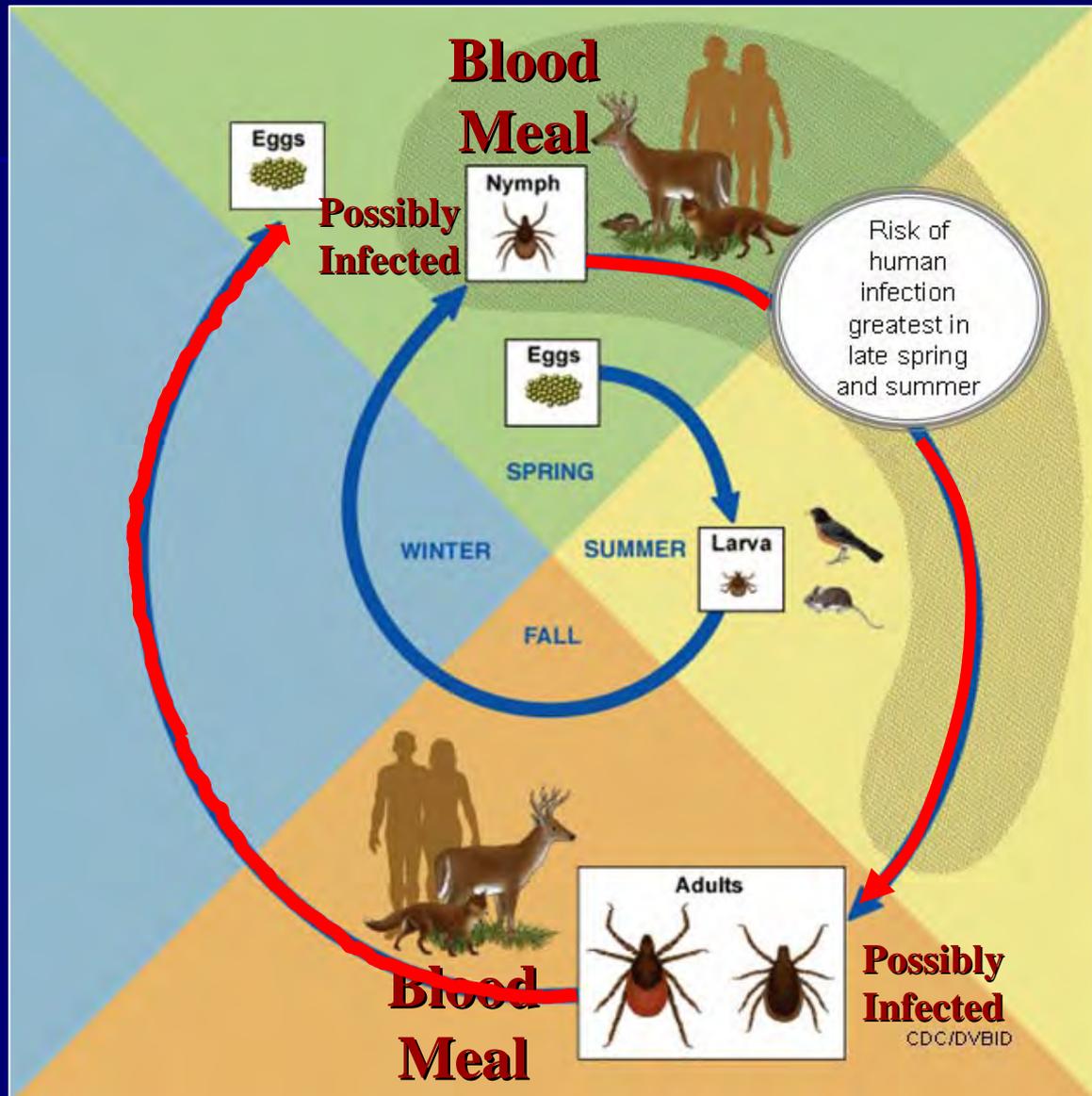


Tick Life Cycle

Infected nymphal stage ticks are the primary vector of Lyme disease to humans during the late spring and early summer

Adult ticks feed primarily on deer in the fall & obtain blood to nourish a batch of eggs

Infected adult ticks may occasionally vector Lyme disease to humans during the fall, and on warm days of the winter and early spring.



Black-legged (Deer) Tick

Ixodes scapularis

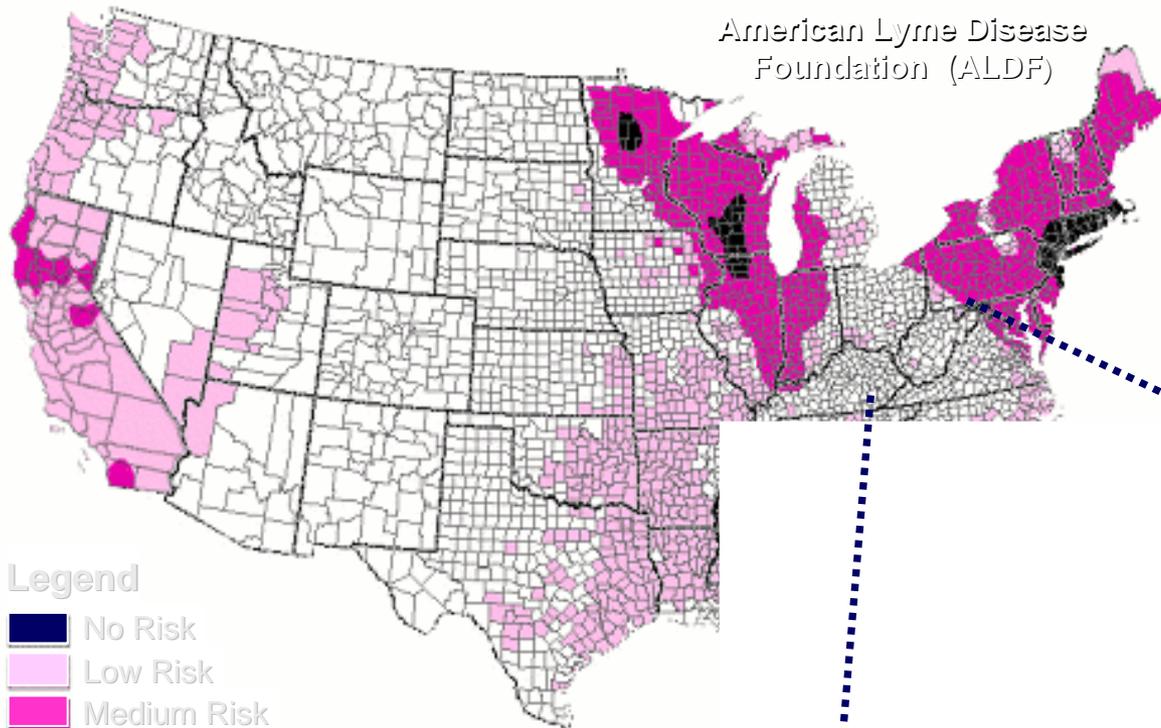


From left to right: adult female, adult male, nymph, and larvae on a centimeter scale.

Lyme Endemic Regions

– The Zones of Endemicity are Expanding

American Lyme Disease
Foundation (ALDF)



Legend

- No Risk
- Low Risk
- Medium Risk
- High Risk

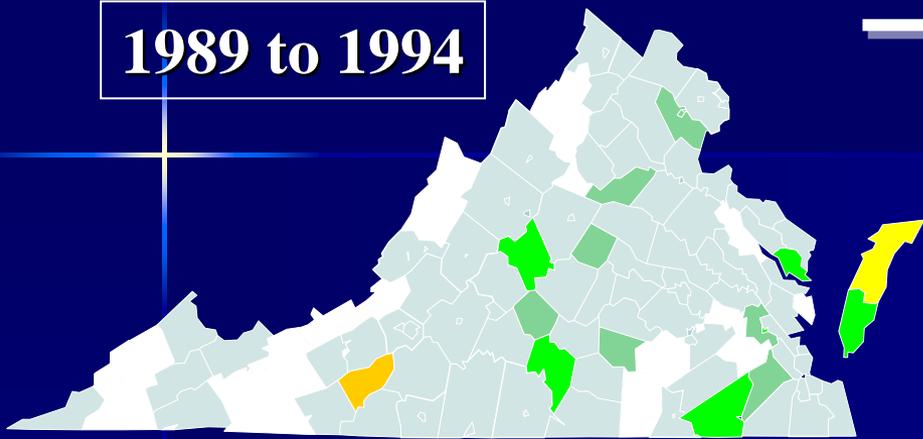
And Lyme disease has become increasingly common in the states that have become endemic .

Virginia is on the front line of this expanding zone of Lyme disease endemicity.



Lyme Disease Cases / 100,000 Population

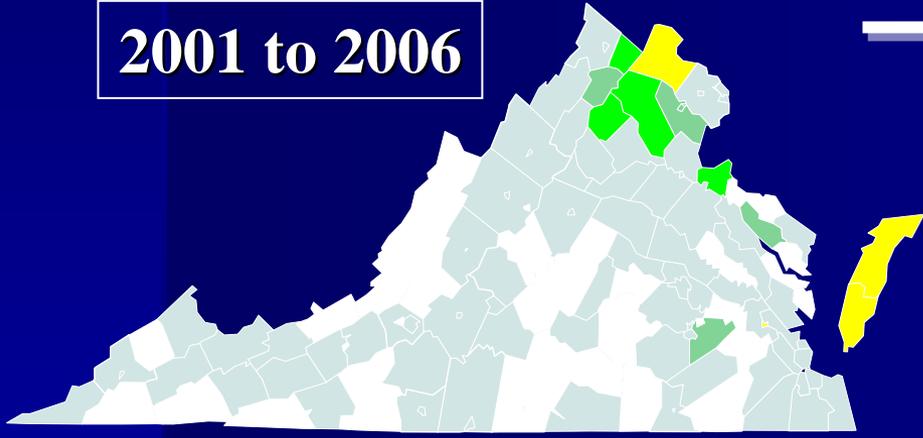
1989 to 1994



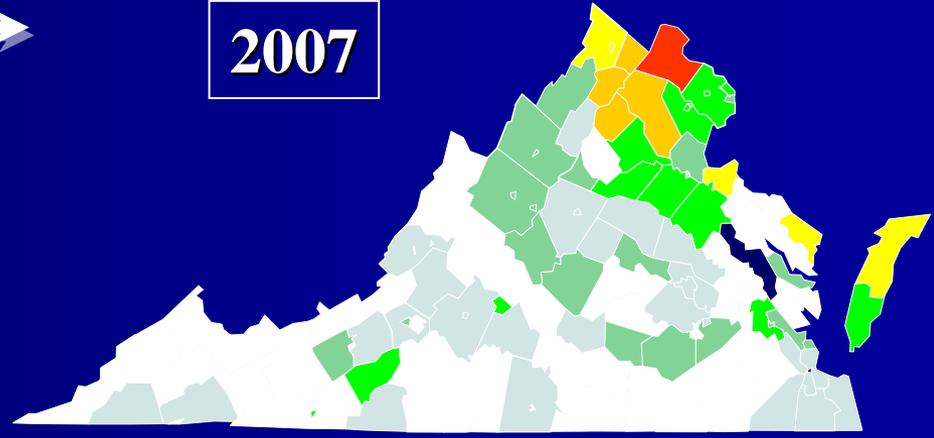
1995 to 2000



2001 to 2006



2007



Cases per 100,000 population

0.1 to 4.9

5 to 9.9

10 to 24.9

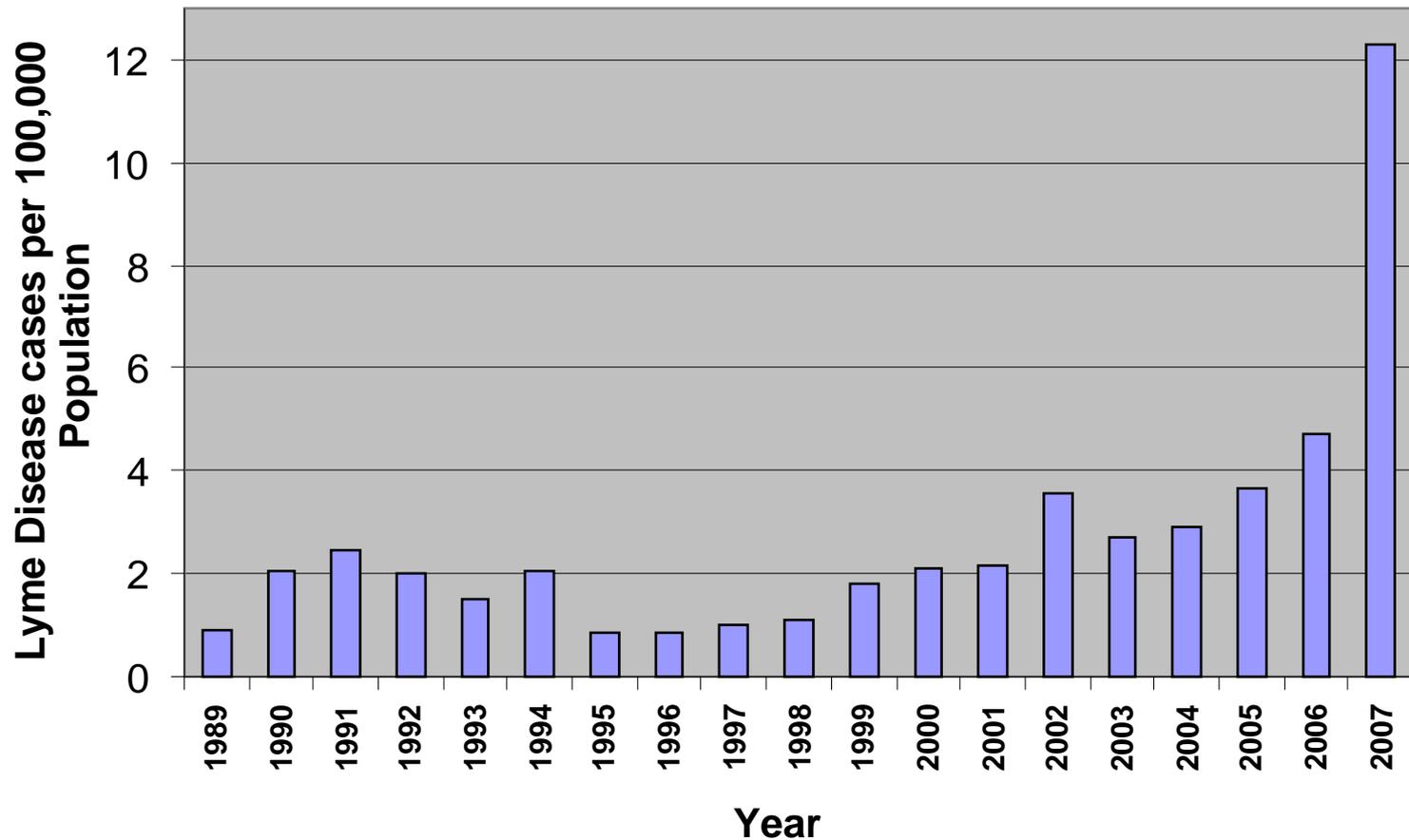
25 to 49.9

50 to 99.9

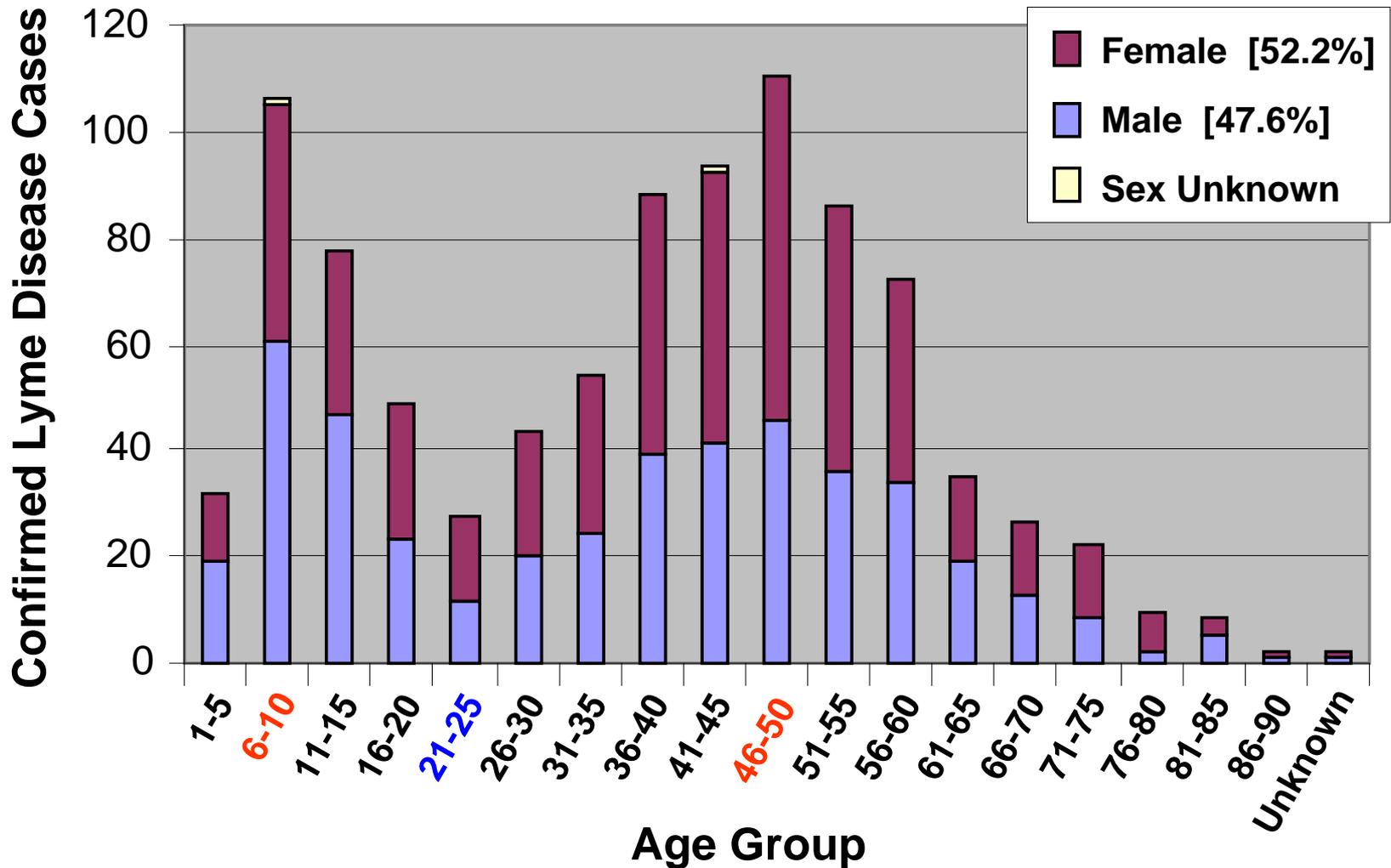
100+

Lyme Disease in Virginia, 1989 - 2007

Annual Rates of Confirmed Lyme Disease Cases per 100,000 Population



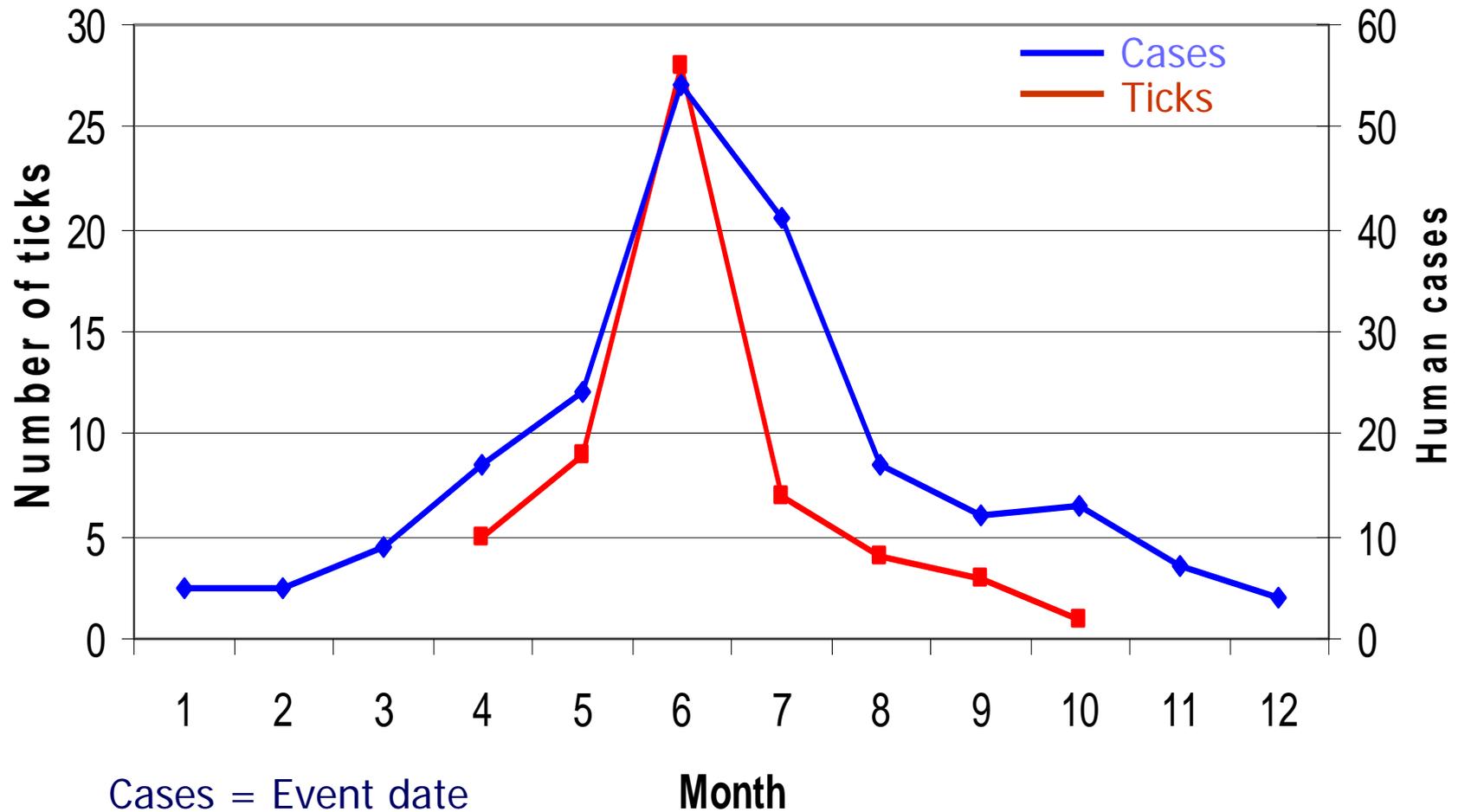
Virginia's 945 confirmed Lyme disease cases in 2007 by sex and age group.



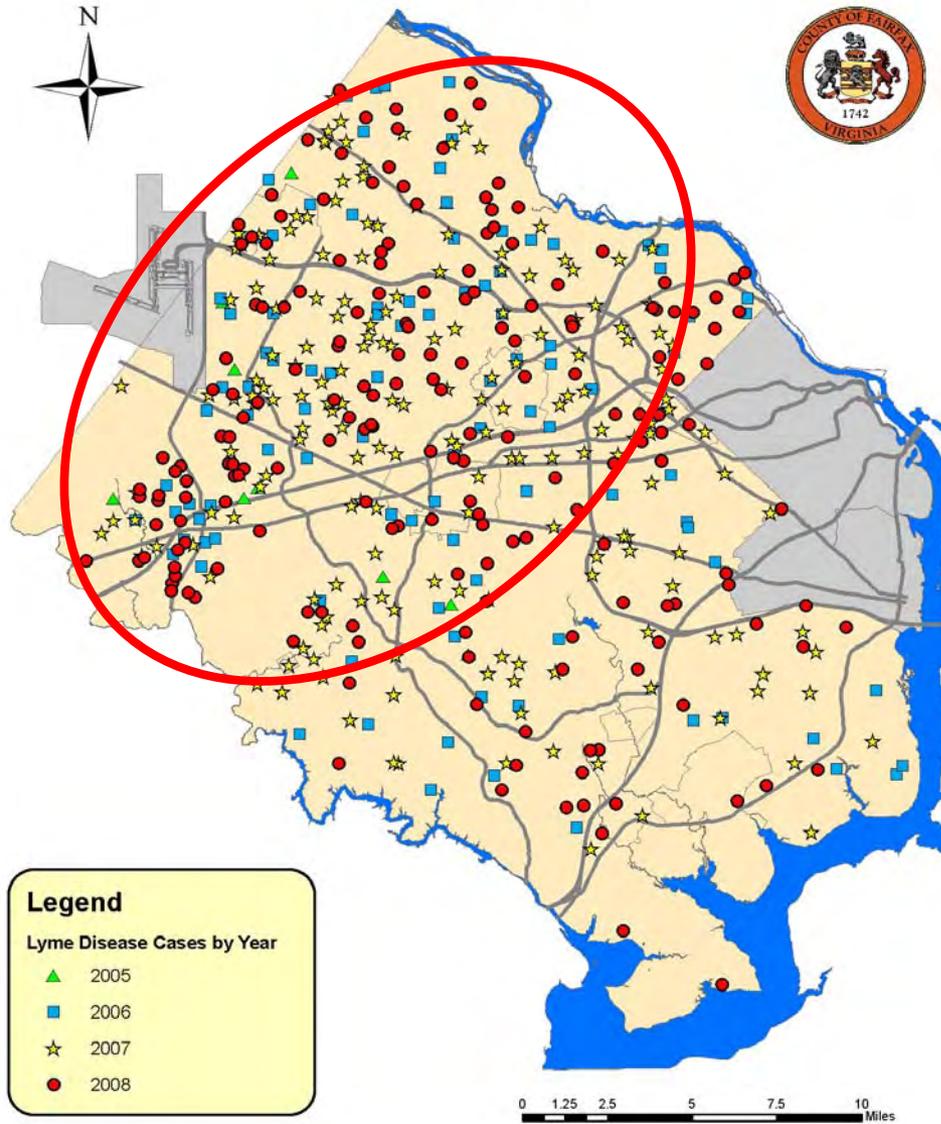
Black-legged (Deer) Tick Surveillance in Fairfax County

		Managed Deer Hunts		
Year	<i>Ix. scapularis</i>	No. (+)	Ticks Tested	Infection Prevalence
2007	Adults	32	715	4.48%
2008	Adults	86	634	13.56%

Ticks Collected and Human Cases, Fairfax 2007



Lyme Disease Activity in Humans 2005 - 2008



Lyme Disease Basics

Causative agent:

- Bacterium

Transmitted via:

- Infected Black-legged (deer) ticks

Disease Reservoir:

- White-footed mice

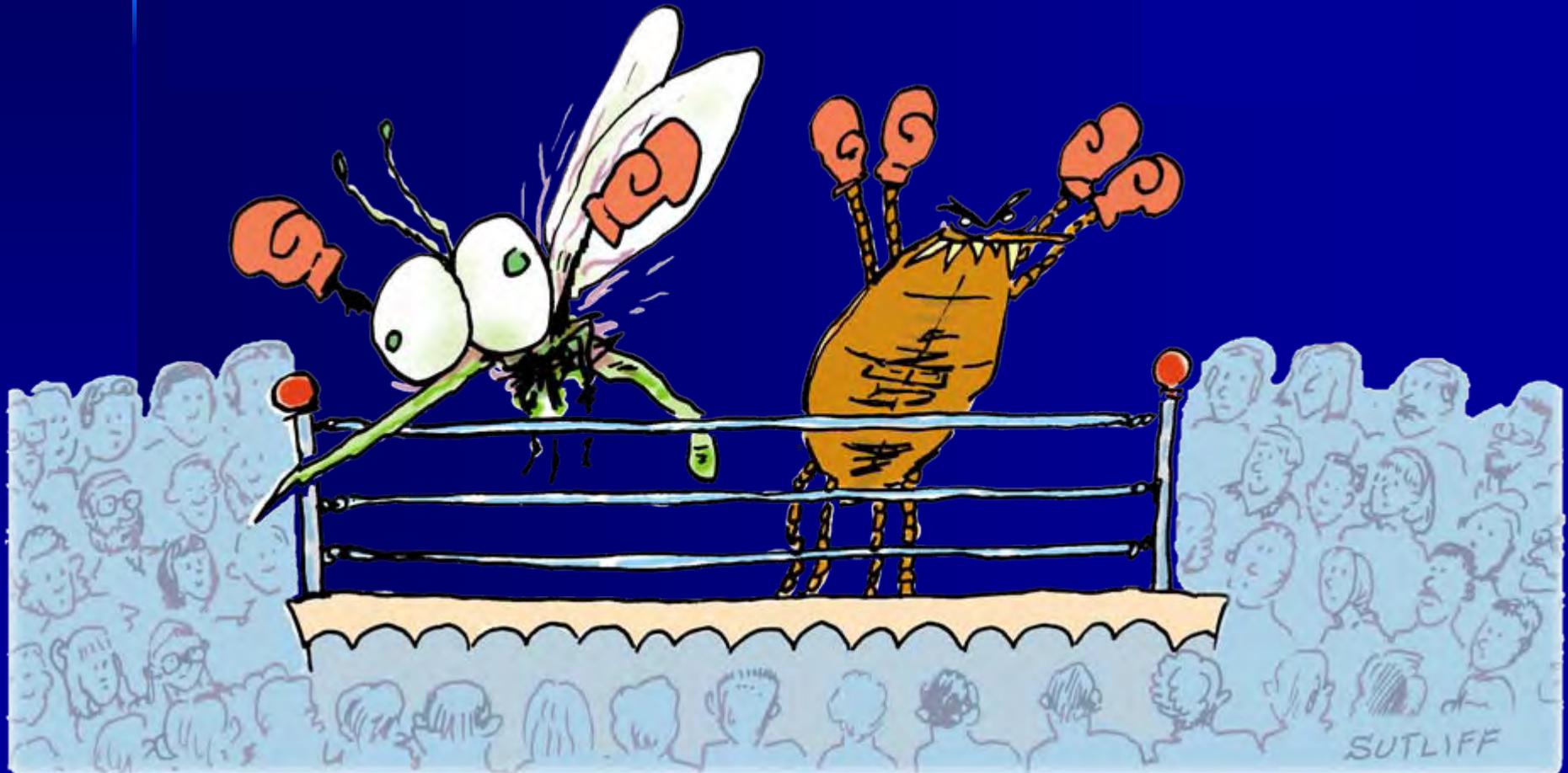
Vector Maintenance Host:

- White-tailed deer



What can I do?

Personal Protection



Dress to Protect

Tie back long hair or wear a hat.

Treat clothes with permethrin.

HEY! I CAN'T DO ANYTHING.

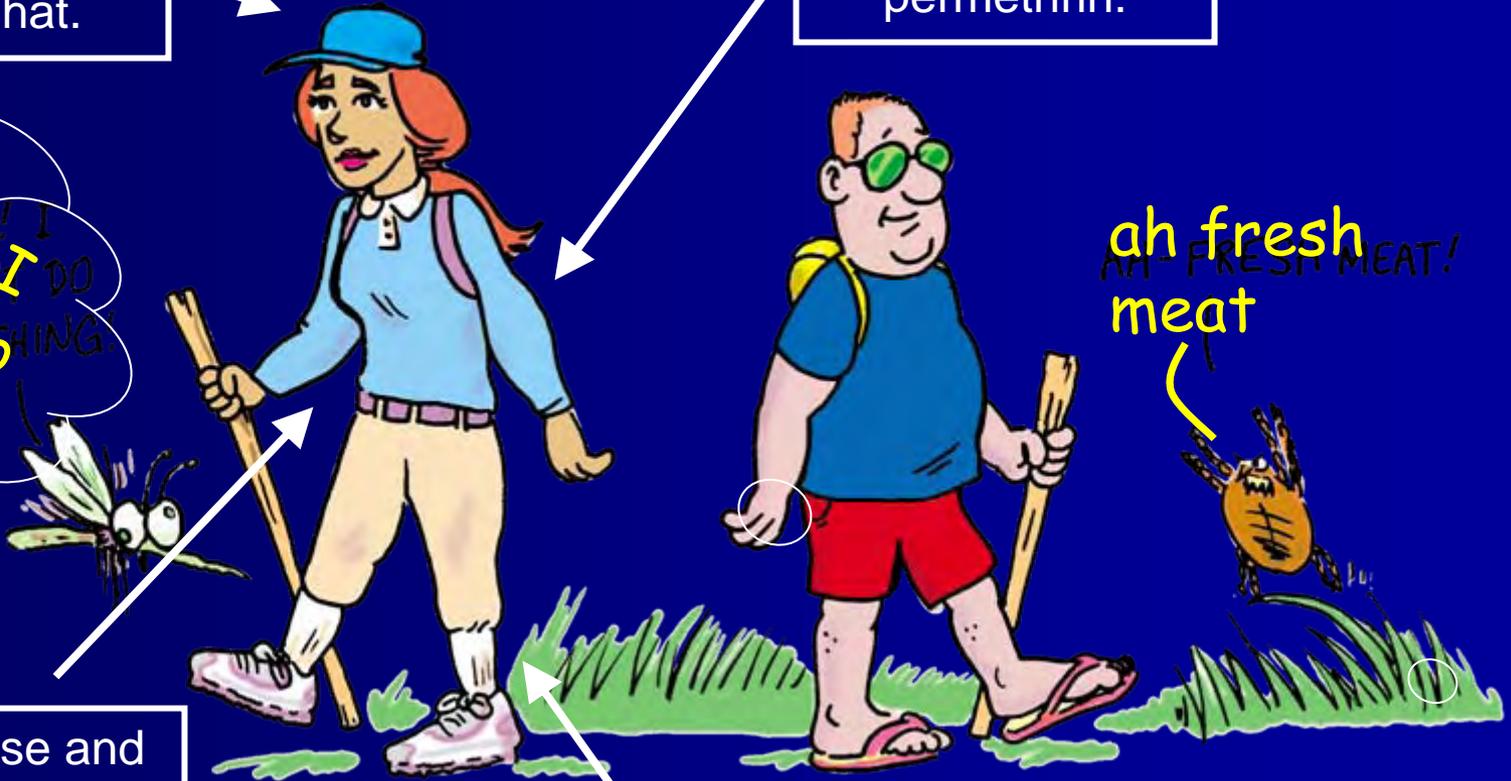
Hey, I can't do anything

Wear long, loose and light colored clothing.

Tuck your pant legs into your socks and your shirt into your pants.

ah fresh meat

ah fresh meat!



Permethrin FAQs

What is it?

- Insecticide and insect repellent

How do I use it?

- Apply to clothing only (do not apply to skin)
- Treat clothes outdoors and allow to dry for 2-4 hours before wearing
- Permethrin remains effective for up to 5 washes
- Always read and follow label instructions

Where can I get it?

- Outdoor equipment stores (permethrin is an ingredient – not a trade name)

Is it safe?

- Yes, permethrin will not harm you or your clothes if applied according to the label instructions.



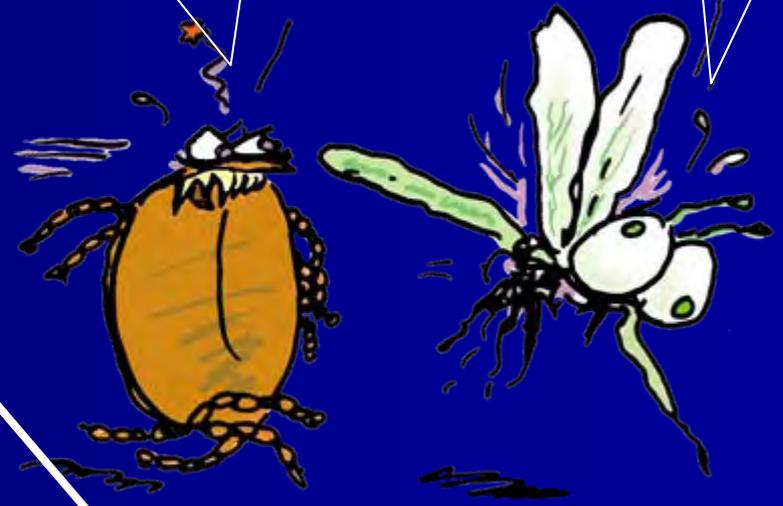
Always Wear Insect Repellent



Effective against ticks & mosquitoes

Hey, who are these guys?
WHY ARE THESE GUYS?

There's no time, RUN!
THERE'S NO TIME - RUN!



Only effective against mosquitoes

Avoid Tick Habitats

Where are they?

- Leaf litter and low lying vegetation.
- Forests and woodlands where host animals are present.

How do I avoid them?

- Stick to the middles of trails.
- Avoid tall grass and brush.

Mow your lawn



Perform Regular Tick Checks

When: During, immediately after and several hours after field activities.

Where: Whole body – especially hidden and hairy areas.

How: Use a friend or mirror to check hard to see areas.



I found a tick attached to me... now what?

1. Don't panic
2. Remove it
3. Save the tick for identification
4. See a physician if you experience symptoms.



Acknowledgements:

Dr. David Gaines – VDH Division of
Environmental Epidemiology

Dr. Peter Troel – Fairfax County Health
Department

Thank you



Lyme Disease:

Culprits & Solutions, What You Can Do and What the County is Doing

Lyme Disease Town Hall Meeting

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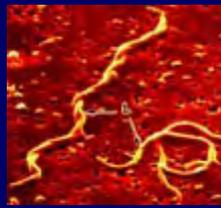
Supervisors Frey and Herrity

Vicky Monroe

Fairfax County Wildlife Biologist

July 22nd, 2009





Borrelia burgdorferi



The Culprits

- *HOSTS* -



White-footed Mouse
(*Peromyscus leucopus*)



White-tailed Deer
(*Odocoileus virginianus*)

White-footed mouse

(*Peromyscus leucopus*)



**An important source of the bacterium that causes
LYME DISEASE**

White-footed mice are primary reservoirs for tick nymphs and tick larvae



LARVAE

+



NYMPH



Tick larvae cling to blades of grass after hatching and await a host

White-tailed deer

(*Odocoileus virginianus*)



**Primary host of adult ticks infected with
LYME DISEASE**

White-tailed deer are reservoirs for adult ticks



ADULT



Adult female ticks lay up to 2,000 eggs once and then die

What You Can Do

PROTECT YOUR PETS

- ◇ Flea & tick collar

- ◇ Pet-safe insecticide

- ◇ Frequent body & fur checks

- ◇ Avoid unsupervised activity in wooded or heavily grassed areas



What You Can Do

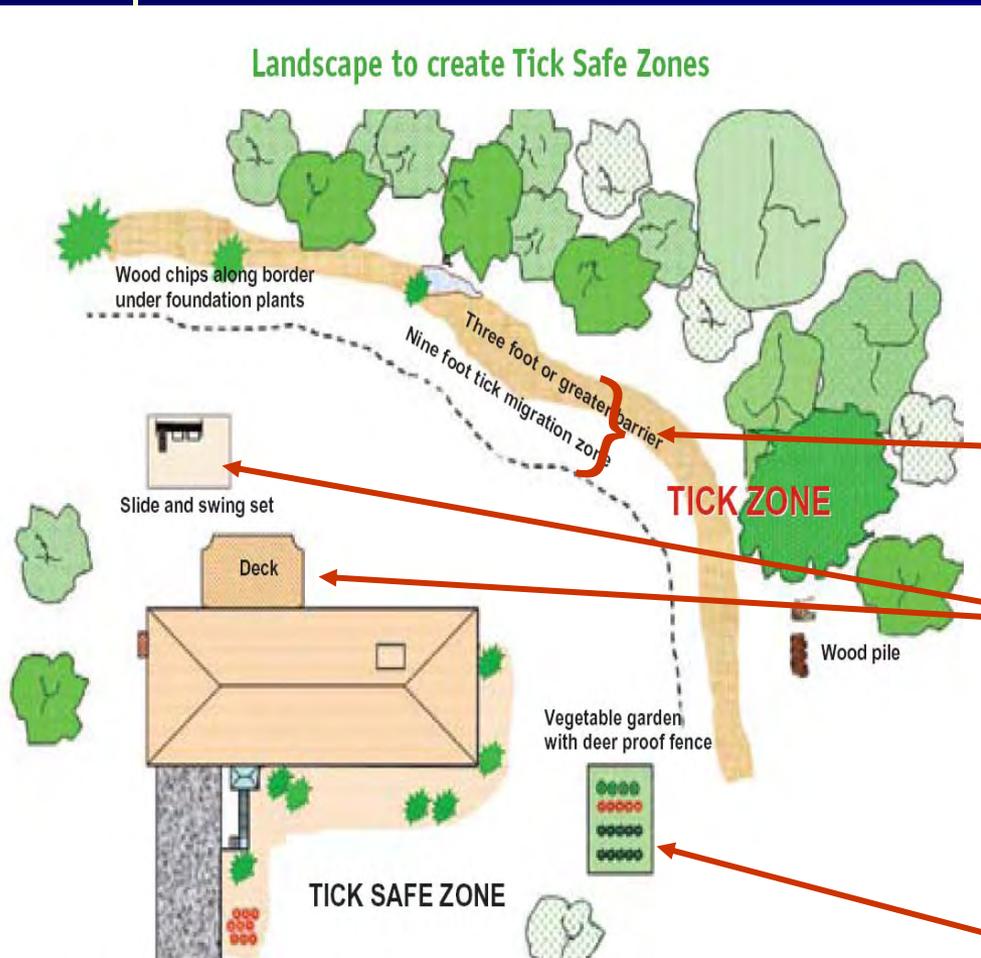
PROTECT YOUR YARD

- ◇ Keep yard clean & well maintained
- ◇ Keep grass short
- ◇ No wood piles or leaf litter
- ◇ Area application acaricides



Make Yard a Tick Free Zone

Practice Tick-Safe landscaping



Adapted from CT Agricultural Experiment Station

- Create a sunny, dry area
- Remove leaf litter & tall grass
- Lay down wood chips and gravel
- Keep playground equipment and decks away from yard edge and trees.
- Use fences

Use Chemical Control



- Use permethrin to control ticks in your yard
 - ❖ 1st application late March early May
 - ❖ Reapply according to label

Deer Exclusion

◇ Deer exclusion fencing



◇ Deer repellents



◇ Deer resistant plants



What You Can Do



PROTECT YOUR HOME

- ◇ Discourage nesting activity outside and inside the home
- ◇ Do not leave food sources available or pet food outside
- ◇ Rodent exclusion techniques



What You Can Do

Deer management options on private property

◇ Urban Archery



What Fairfax County is doing

Deer management plan

- ◇ An integrated management approach
- ◇ New plan developed & implemented each season
- ◇ Renewed collaborative effort between agencies and jurisdictions

What Fairfax County is doing

◇ **Public Education**

◇ **Community Outreach**

◇ **Continued Research**

4-Poster Deer Baiting Station



Community Resources

- ◇ Fairfax County Health Department
 - ◇ Center for Disease Control
www.cdc.gov
 - ◇ Local Doctor's Office
 - ◇ Local Library
 - ◇ Local Nursery
- ◇ Fairfax County Wildlife Biologist

Coming Soon

New & Improved

Fairfax County Government website

WILDLIFE Animal Section

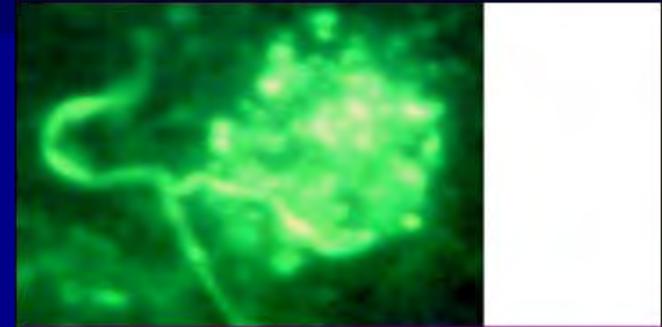


*A wildlife information & education
resource for the residents of
Fairfax County*

Lyme...

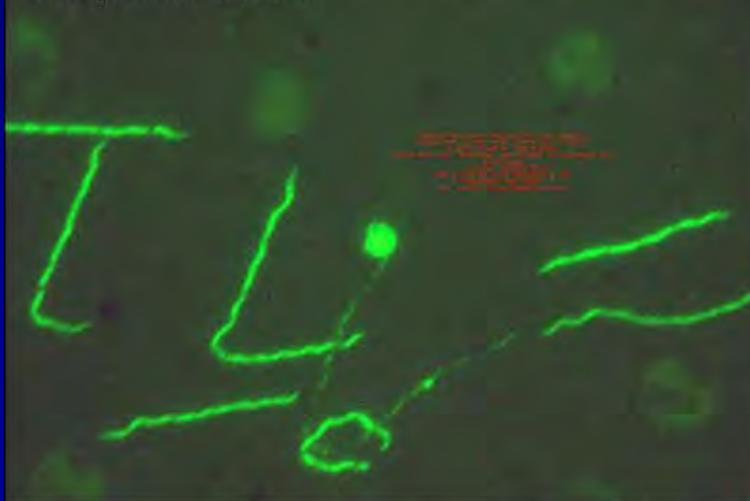
The Great Imitator

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Supervisors Frey and Herrity



Borrelia burgdorferi
three profiles in one image
Cylinder (corkscrew),
Cyst (Round) and Granular (dots)
by: Alan MacDonald, MD

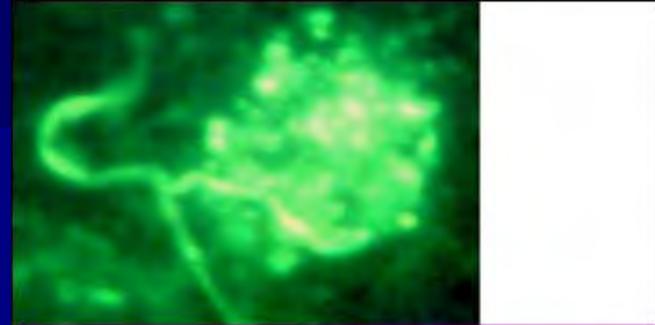
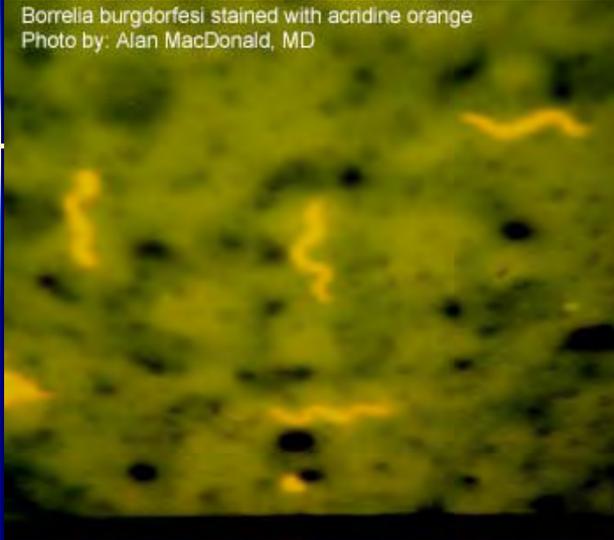
B31 original strain of borrelia burgdorferi with cysts
Photo by: Alan MacDonald, MD



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July 22nd, 2009

What is Lyme Disease?

Borrelia burgdorferi stained with acridine orange
Photo by: Alan MacDonald, MD



Borrelia burgdorferi
three profiles in one image
Cylinder (corkscrew),
Cyst (Round) and Granular (dots)
by: Alan MacDonald, MD

- Lyme disease is a clinical diagnosis. The disease is caused by a spiral-shaped bacteria (spirochete) called *Borrelia burgdorferi*. In the same family of bacteria as Syphilis. The Lyme spirochete can cause infection of multiple organs and produce a wide range of symptoms.
- Lyme disease is unique in its ability to present with a variety of symptoms.

Continued...

Author Amy Tan, a Florida State quarterback who was found half-naked and disoriented in downtown Tallahassee, Pop singer Daryl Hall, Sen. Chuck Schumer D. NY...
If you're wondering what they have in common... it's
Lyme.

Lyme disease is a major public health problem and growing crisis. It's the most prevalent bug-borne illness. According to the Centers for Disease Control and Prevention new cases are reported in about 20,000 people yearly and this number represents a 10-fold underestimate.

Lyme

- No other disease has ever caused such a divide in the medical community the way this disease has.
- IDSA Infectious Disease Society of America has one opinion which is basically 14-21 days of antibiotic therapy and Lyme is cured even if the same symptoms when dx never improve or persist after treatment it must be something else
- Many Physicians and Healthcare Professionals like International Lyme Disease Association have another opinion.

Continued...

The International Lyme Disease Association and many physicians and Healthcare practitioners feel Lyme bacteria have the ability to evade immune destruction, entrench themselves deep within tissues and migrate throughout the body with impunity causing a multi-system illness that can be baffling to many physicians.

What is seen in Medical offices everywhere are patients of all ages with innumerable symptoms running the gamut from muscle and joint pain to heart palpitations to neurological and even psychiatric illness. Lyme patients may be misdiagnosed as having other serious diseases

Continued...

Like syphilis in the 19th century, Lyme disease has been called the great imitator and should be considered in the differential diagnosis of rheumatologic and neurologic conditions, as well as chronic fatigue syndrome, fibromyalgia, ALS, lupus, multiple sclerosis, rheumatoid arthritis and psychiatric disorders, Parkinson's, memory disorders, and any difficult-to-diagnose multi-system illness.

Lyme disease may be hard to diagnose and can be difficult to treat

Why Is That?

* First, there is no single reliable diagnostic laboratory test. The common two-tiered blood test cannot be solely relied upon for diagnosis.

* Second, there is no universally accepted treatment. During chronic infection the organism burrows deep into tissues that some antibiotics can reach only marginally. This is but one of many reasons why a two-to-four week treatment cannot eliminate chronic infection.

The consensus opinion of the International Lyme and Associated Diseases Society and many other Healthcare professionals is that an individualized treatment approach is necessary based on clinical judgment.

Variability

There are 5 subspecies of *Borrelia burgdorferi*, over 100 strains in the US, and 300 strains worldwide. This diversity is thought to contribute to the antigenic variability of the spirochete and its ability to evade the immune system and antibiotic therapy, leading to chronic infection.

Furthermore, a person with “Lyme disease” may be co-infected with other organisms and “co-infections” often require different antibiotic therapy compared to Lyme.

Testing

Testing for Babesia, Anaplasma, Ehrlichia and Bartonella (other tick-transmitted organisms) should be performed. The presence of co-infection with these organisms points to probable infection with the Lyme spirochete as well.

If these coinfections are left untreated, their continued presence increases morbidity and prevents successful treatment of Lyme disease.

Continued...

- Fewer than 50% of patients with Lyme disease recall a tick bite.
- In some studies this number is as low as 15% in culture-proven infection with the Lyme spirochete.
- Fewer than 50% of patients with Lyme disease recall any rash. Although the erythema migrans (EM) or “bull’s-eye” rash is considered classic, it is not the most common dermatologic manifestation of early-localized Lyme infection.
- Atypical forms of this rash are seen far more commonly. It is important to know that the EM rash is pathognomonic of Lyme disease and requires no further verification prior to starting an appropriate course of antibiotic therapy.

Continued...

Atypical forms of this rash are seen far more commonly. It is important to know that the EM rash is pathognomonic of Lyme disease and requires no further verification prior to starting an appropriate course of antibiotic therapy.

The ELISA screening test is unreliable. The test misses 35% of culture proven Lyme disease (only 65% sensitivity) and is unacceptable as the first step of a two-step screening protocol. By definition, a screening test should have at least 95% sensitivity.

Rash Examples...

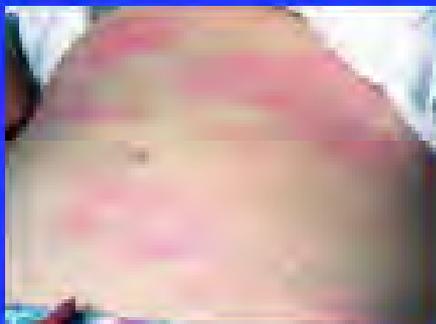
118 cases of EM with culture or PCR confirmed *Borrelia burgdorferi* infection EM rashes were:



Homogenous – 59%



Central erythema – 32%



"classic" EM

Central clearing 'bulls eye' – only 9%

N Engl J Med 2006;354:2794-801

Ann Intern Med 2002; 136:421

Background Testing: Two-Tier Testing

- Screening Test
 - Polyvalent ELISA
 - Insensitive in first two weeks of infection
 - If positive or indeterminate, confirmatory done
- Confirmatory Test
 - Immunoblot of both IgM and IgG
 - CDC criteria used for interpretation



Photo taken by: Ed Masters



Lyme rash, no central clearing



Photo taken by: Ed Masters



Problems

The ELISA screening test is unreliable. The test misses 35% of culture proven Lyme disease (only 65% sensitivity) and is unacceptable as the first step of a two-step screening protocol. By definition, a screening test should have at least 95% sensitivity.

Of patients with acute culture-proven Lyme disease, 20–30% remain seronegative on serial Western Blot sampling. Antibody titers also appear to decline over time; thus while the Western Blot may remain positive for months, it may not always be sensitive enough to detect chronic infection with the Lyme spirochete.

Continued...

For “epidemiological purposes” the CDC eliminated from the Western Blot analysis the reading of bands 31 and 34 (in part because of a Lyme Vaccine that was briefly on the market), These bands are so specific to *Borrelia burgdorferi* that they were chosen for vaccine development. So those “bands “ were removed from commercial lab tests. The vaccine for Lyme disease was pulled from the market due to adverse reactions back in the 90’s but currently commercial labs have yet to add the 2 most common bands back to commercial Lyme tests, and those are only available at a handful of labs that specialize in Lyme testing, a positive 31 or 34 band is highly indicative of *Borrelia burgdorferi* exposure.

Food for Thought

It's common knowledge that deer carry deer ticks, but I was surprised to learn in a think tank on Lyme, one of the biggest vectors (carriers) of the ticks are birds. A tick can drop from a bird, land to bite a person, and drop off leaving the person unaware that they have been bitten.

If you have a sudden onset of health problems or have been struggling with chronic health issues without answers or resolution, you may want to be tested for Lyme.

Find a Lyme literate Healthcare Provider.

Helpful Resources

- **Movie: Under Our Skin** - watch it <http://www.ilads.org>
- **The National Capital Lyme and Tick-Borne Disease Association** - <http://www.natcaplyme.org>
- **Turn the Corner Foundation** - <http://www.turnthecorner.org/>
- **LymeNet — The LymeNet Newsletter** - <http://www.lymenet.org/>
- **The Lyme Disease Association** - <http://www.lymediseaseassociation.org/>
- **The Lyme Times** - <http://lymetimes.org/>
- **Lyme Info** - <http://www.lymeinfo.net/>

Other Lyme Disease Related Sites

Lots of Links on Lyme Disease...

- <http://www.geocities.com/HotSprings/Oasis/6455/lyme-links-misc.html#orgs>
- **Interview** by Clinical Neurology News about Neuroborreliosis and its connections to Alzheimer's disease. iTunes Required - <http://www.medicalnewspodcast.com/media/stat071406.mp3>
- www.unh-lyme.org

Helpful Books on Lyme

- CURE UNKNOWN by Pamela Weintraub
- Bartonella: Diagnosis and Treatment by James Schaller, M.D.
- The Lyme Disease Solution by Kenneth B. Singleton, MD, MPH
- "It's All In Your Head" Series of Books on Lyme Disease by author PJ Langhoff
- The Widening Circle: A Lyme Disease Pioneer Tells Her Story
- Coping with Lyme Disease: Guide to Dealing with Diagnosis and Treatment
- The Experts of Lyme Disease: A Radio Journalist Visits The Front Lines of the Lyme Wars
- The Lyme Disease Survival Guide: Physical, Lifestyle, and Emotional Strategies for Healing by Connie Strasheim

The National Capital Lyme and Tick-Borne Disease Association

A Place to Turn to



Monte Skall

*Executive Director of The National Capital
Lyme and Tick-Borne Disease
Association*

July 22nd, 2009

- PO Box 8211, McLean,
Virginia 22106
- <http://www.natcaplyme.org>
- 703 821-8833
natcaplyme@natcaplyme.org



The National Capital Lyme and Tick-Borne Disease Association

Offering education and support to those suffering from Lyme and tick-borne diseases since 2001

Mission Statement

The National Capital Lyme and Tick-Borne Disease Association strives to improve the quality of life for people suffering from Lyme and other Tick-Borne illnesses by offering support and disseminating information that educates and empowers patients, families, healthcare workers, and the community at large about these diseases. We have set forth three strategic objectives.

1. Build Support

We are a network for sharing our personal trials and experiences. We participate with other tick-borne illness organizations through medical conferences and educational seminars.

2. Increase Awareness

We heighten public awareness about Tick-Borne diseases by hosting presentations by healthcare professionals. We work with local and state Health Departments in educating through public service programs and the distribution of printed materials. We gain media attention about tick borne illnesses through tv, radio and newspaper coverage.

3. Find A Cure

We build support for research by educating local, state, federal and international medical and political representatives. We work on both state and federal legislation for Lyme and Tick-Borne Diseases. We raise funds to support Lyme research.

About Us

The National Capital Lyme and Tick-Borne Disease Association is led by a member selected Board of Directors. We advance our goals through teamwork and collaboration with other patient and professional groups throughout the country. We seek to regain our health and conquer this disease. We are inclusive and seek participation from all those interested in working toward this goal.

NatCapLyme is a 501(c)(3) tax exempt charity under the Internal Revenue Code.

Update on the Federal Government's Role

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(202) 225-0437 fax

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(800) 945-9653 in state
(703) 709-5802 fax



Dan Scandling

Chief of Staff

Congressman Wolf's Office

July 22nd, 2009

Questions and Answers

Thank You for Coming!

Please pass on this information to your loved ones...

Channel 16 will be broadcasting this town hall meeting on the following dates:

- Saturday August 1, 8 pm
- Thursday August 6, 8 pm
- Tuesday August 11, 8 pm

You will also be able to watch a stream online of this town hall meeting shortly, please visit

<http://www.fairfaxcounty.gov/cable/channel16/vod.htm>

Additionally the slide-show presentation will be available at

<http://www.fairfaxcounty.gov/springfield>