Ticks and Tick-borne Diseases: How to Protect Your Family and Pets

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TALBOT ECOLOGICAL LAND CARE
WHY OFFER THIS EDUCATIONAL INFO:

Talbot Ecological Land Care (TELC) and Environmental Landscape Consultants LLC (ELC) is pleased to offer this program as a public service to educate the residents and visitors of Cape Cod, the Islands and southeastern Massachusetts. This program was first presented at St. Mary’s Church in Barnstable, where concern among congregants was high regarding the risk of ticks and tick-borne diseases to people and pets. (Please only post online with permission.)

As Chair of the Environmental Oversight Committee for the Town of Mashpee, columnist and president of the Mashpee Environmental Coalition, and a restoration ecologist, landscape designer and consultant for ELC and TELC I have helped many residents with the potential hazards of ticks—including recommending changes to their landscapes and tick treatments to reduce those risks.

A key reason for doing this program is to reassure people that there are lots of things you can do to protect yourself, your family, your guests and your pets. Contact us for more information.
Ticks are small, spiderlike animals (arachnids). They bite to fasten themselves onto the skin and feed on blood. Ticks live in the fur and feathers of many birds and animals.

Ticks are food for many animals, such as birds, reptiles and amphibians. As parasites, they also help control the population of their larger host animals. They are a part of the natural balance of life on Planet Earth—and on Cape Cod.
PRINCIPAL DISEASE-CAUSING TICK SPECIES ON CAPE COD

This program focuses on the Blacklegged Tick (*Ixodes scapularis*), also known as the Deer Tick; which is the tick species of greatest concern in this region.

We will also be discussing two other ticks of concern to people and pets: the Dog Ticks, especially the American Dog Tick, and the newly arrived Lone Star Tick from the southern U.S.
The Blacklegged Tick (Deer Tick) can transmit a number of diseases to humans (and to pets):

- **Lyme disease** (*Borrelia burgdorferi*): takes 24 to 36 hours to transmit from the tick to humans; about half of adult ticks are infected with Lyme disease on Cape Cod; about 25-35% of larval ticks are infected
- **Babesiosis** (*Babesia microti*): malaria-like symptoms
- **Human Granulocytic Anaplasmosis; HGA** (*Anaplasma phagocytophilum*)
- Newly reported diseases, such as Powassan disease and *Borrelia miyamotoi* infection
Among infectious diseases in Mass. in the last few years, only hepatitis and sexually transmitted diseases affect more people than Lyme disease.

- Cases of Babesiosis, which can cause severe anemia, shock and, in rare cases, death, are increasing each year on the Cape and Islands.

- Symptoms of HGA generally include fever, headache (that often doesn’t get better with over-the-counter medicine), chills, muscle aches, and fatigue. Less commonly, people may have abdominal pain, nausea, vomiting, diarrhea, cough and joint aches. HGA is treated with antibiotics.
WHERE ARE TICKS AND HOW DO THEY GET ON PEOPLE AND PETS

The Blacklegged Tick is found mostly in deciduous woodlands in leaf litter and shaded undergrowth. They can be found in tall grasses, but cannot tolerate being in a sunny area for more than a few hours. They need a moist environment. Passive; they wait for prey to come to them.

American Dog Ticks will seek out prey more, being attracted to CO$_2$. They prefer overgrown weedy roadsides and fields, edges of paths and hiking trails, wooded areas, medium height grasses and shrubs and sunny or open areas around woods.
DESIGNING LANDSCAPES FOR WILDLIFE is Ecological Design that Adds Beauty, Value, and Protects Our Natural Resources

- Conserve, create or enhance naturally vegetated areas, wildlife corridors, meadows, forests with an understory planting, wetlands and other “wild” areas that provide what wildlife need:
  - **Food**: provide natural food year-round — berries, cones, seeds, nuts, flowers, insects
  - **Cover**: cluster trees, shrubs, evergreens, grasses
  - **Nesting**: varying heights and density of vegetation; leave snags, slash and fallen logs
  - **Water** for drinking, bathing and living
  - **Nest boxes, bird baths and feeders** help, but are no substitute for native, vegetated habitat areas.
DESIGNING FOR WILDLIFE includes landscapes where ticks may be found; but it is important to help enhance the environment for wildlife, including birds, butterflies and pollinators.

- We encourage all residents not to overreact to the potential risk of ticks and tick-borne diseases. Please do not cut down your landscape plants and woodlands, take out your gardens and shrub borders, or convert your landscape to a relatively sterile environment of just turf to protect yourself.
- The key lesson of this program is that you can protect yourself and your pets by just adopting some common-sense practices.
- The following slides show wildlife plantings and what to watch for in those environments.
A sunny portion of this client’s lawn was removed and replaced with native and appropriate grasses, shrubs and flowering forbs. This enhanced border is a butterfly, bee and bird magnet. Deer ticks are not as likely to be found here because they prefer shade.
Even after this border of flowers and grasses has grown in a few years later, the risk from deer ticks is less because of the sunny environment; deer ticks prefer shaded areas. Just follow the practices we recommend later to repel and check for ticks.
This front lawn was converted to an herb and flower garden to provide food, as well as habitat for pollinators—and it adds year-round beauty, color and interest. It is not an environment that deer ticks prefer, although any dense groundcover can have small mammals and ticks.
This stand of native beach plum is adapted to poor, dry sandy soils and provides flowers, fruits and other benefits. Ticks can be found in woodland/shrub borders but less so in sunny shrub gardens.
One year after this ecological landscape restoration the 4 ft. wide walkway brings you safely through a garden that is already very attractive—a truly low maintenance landscape with color and four seasons of interest that attracts birds and butterflies without you contacting potential tick habitat.
A bird feeding area attracts birds and small native mammals that can leave ticks behind; if possible, keep bird feeding areas away from the house and areas where people go. Take protective measures when filling feeders; check yourself for ticks just in case.
Inside this screen planting is a peaceful “Garden Room” with a small, organic lawn, a mostly native wildlife planting/habitat and bird feeding area. Ticks along the edge of wooded areas are a possibility; place seating areas in lawn or mulched area to minimize the possibility of ticks.
Deer ticks can be picked up brushing against brushy areas, but are not likely to be on mowed lawns, even in shade. They dry out easily and need more moisture in their habitat. Dog ticks are more tolerant of sunny areas and can be found on lawn edges. More on where ticks are more likely to be encountered later in the program.
Densely planted shade gardens with appropriate plants are low maintenance and attractive - but may be tick habitat. When gardening, follow the advice below on checking for, removing and repelling ticks.
Groundcovers, such as English ivy and pachysandra, are places where small mammals find shelter and where ticks can be found.
Woodlands with leaf litter and low growth provide good habitat for ticks—as well as for lots of important wildlife. Woodlands with leaf litter, for example, are critical to rare species found in vernal pools, such as the one in the photograph below. When near woodlands, avoid brushing against low growth; when in woodlands, check for ticks on you and pets. Follow other recommendations that follow.
Creating a Tick-Safe Zone (TSZ) Through Landscaping

1: Avoid tick zone: forest, brush, groundcover, tall grass
2: 3 ft. wood chip or stone barrier between lawn and tick zone
3: Put wood piles on wood chip barrier away from the home
4: 9 ft. of lawn between wood chips & patio, gardens, play set
5: Enjoy outdoor activities (gardening, play) in this TSZ
6: Lots of deer? Use deer resistant plants and/or an 8’ fence
7: Keep play sets in the TSZ in sunny areas that ticks avoid
The 2 Year Black-legged Tick Life Cycle:
The Nymph Phase is the One that Results in More Lyme Disease

Nymphal blacklegged ticks are very small (about the size of a pinhead), difficult to spot, and are active during the late spring and summer months when human outdoor activity is greatest. The majority (about 75%) of Lyme disease cases are associated with activities—yard or garden work, picnics and play—around the home.
PRINCIPAL DISEASE-CAUSING TICK SPECIES ON CAPE COD

The Blacklegged (Deer) Tick nymph (small tick on left photo) is the size of a poppy seed (right photo) and is hard to spot on people or pets:
AVOIDING TICK BITES

Deer ticks generally attach low and crawl up from shady, moist areas; *ticks do not jump, fly or drop from trees.*

- Stay in the center of paths
- Avoid contacting brush
- Wear light colored clothes
- Tuck in pants and shirts
- Wear tick repellent clothing; buy or apply with permethrin
- Apply DEET repellents on exposed skin (reapply often)
- Check clothes and skin after being in tick habitat areas
- Remove ticks immediately
- Put clothes in dryer (15 min)
SAFELY REMOVING A TICK

- Use fine-tipped (not blunt) tweezers; grasp tick as close to the skin as possible.
- Pull upward with steady, even pressure; don’t twist or jerk.
- Clean the bite area
- Don’t touch tick with hands
- Dispose or bag for testing
REMOVING AND TESTING A TICK

• If the tick’s mouth part breaks off in the skin it can’t transmit diseases (they are in the tick’s gut). Leave the mouth part to fall out on its own or remove it like a splinter.

• Avoid folklore remedies such as "painting" the tick with nail polish or petroleum jelly, or using heat (burnt match) to make the tick detach. Tick may burrow in or disgorge gut.

• Dispose of tick in tape or toilet, or bag tick for testing for tick species and possible diseases. Go to http://tickreport.com for a $50 test by UMass Lab of Medical Zoology.
REMOVING AND TESTING A TICK

- To see an online video of how to properly remove a tick and the type of tweezers best for this purpose, click on or go to: https://youtu.be/0wotB38WrRY.

- To order one of the more recommended tick tweezers, with one side for removing ticks from a human and the other with a tool for removing ticks from your pets, go to: https://tickease.com/.

- CVS carries another recommended tick tweezer seen in the video above.
Lyme Disease Symptoms

• 3-30 days: an expanding red rash *may* form (70-90% of time)
• Rashes vary in size, shape, color and location (on thigh, groin, trunk is more common)
• Bulls-eye rash (less than 50%)
• Small, localized rash at bite location may be just a reaction to the bite itself
• Mild symptoms may occur with a rash (80% of cases): fatigue, muscle/joint pain, headache, fever, chills, stiff neck. Flu-like symptoms may occur w/out a rash; may be identified as ‘summer flu’ or something else
WHAT IF YOU’VE BEEN BITTEN OR SUSPECT YOU HAVE LYME DISEASE

Consult a doctor if Lyme disease is suspected or you’ve had a tick on you for 24-36 hours (often gray and engorged). In the absence of a rash, Lyme disease may be difficult to diagnose. Lyme disease is probably both over-diagnosed and under-diagnosed with some patients without Lyme disease convinced they have it and other patients with the disease being told they do not have it. A diagnosis of Lyme disease is based mostly on objective clinical findings, and antibiotics may be prescribed even without a firm diagnosis.
PRINCIPAL DISEASE-CAUSING TICK SPECIES ON CAPE COD

The American Dog Tick (*Dermacentor variabilis*), a.k.a. the Wood Tick, is also common in southeastern Mass.
PRINCIPAL DISEASE-CAUSING TICK SPECIES ON CAPE COD

The Black-legged Tick vs. the American Dog Tick: the relative sizes shown below are on a metric scale in centimeters. The Dog Tick is larger, and, unlike the Deer Tick, the adults are the only stages that bite humans.
AMERICAN & BROWN DOG TICKS

• The American Dog Tick bites humans more often in the spring and summer. Found mostly in taller grasses and brushy areas in sunnier areas than deer ticks (in lawn edges, too).

• American Dog Tick transmits Tulareemia and Rocky Mountain spotted fever to humans.

• Unfed dog ticks are about the size of a watermelon seed. Females bite most often.

• Dog ticks transmit several major diseases to dogs, such as Canine Ehrlichiosis (from brown dog ticks) and Rocky Mountain spotted fever.
PRINCIPAL DISEASE-CAUSING TICK SPECIES ON CAPE COD

The Lone Star Tick (*Amblyomma americanum*) has recently arrived on Cape Cod.
THE LONE STAR TICK

• The Lone Star Tick is fast moving and hunts/bites humans and animals much more aggressively than other ticks. Found in woodlands with dense understory and tall grasses in shade. All stages bite humans.
• May spread in southeastern Massachusetts.
• Lone star ticks may carry tularemia, human ehrlichioses and STARI (southern tick associated rash illness; symptoms like Lyme d.)
• This tick transmits very serious diseases to dogs: Rocky Mountain spotted fever and Ehrlichioses, an infection of white blood cells.
PROTECTING PETS FROM TICKS

• Use an over-the-counter tick preventative all year long (Frontline or Advantix) for dogs.
• Keep cats exclusively indoors, which is safer for them generally and all but eliminates their risk of tick-borne illness (protects birds, too).
• Walk dogs on hard surfaces or well-worn paths. “Dogs love going into the woods and that’s a stimulating exercise that we should not deny to them—but keeping them out of the bushes, where most ticks reside—will significantly reduce their exposure,” (Dr. Virginia Sinnott, Angell Memorial Hospital).
PROTECTING PETS FROM TICKS

• Check your pets for ticks regularly and learn how to properly remove ticks.
• Have your pet tested annually for tick-borne diseases—and have urine protein levels evaluated if your dog is or has been positive for Lyme disease. (Only about 5-10% of dogs are affected by Lyme disease). Like humans, it is best to catch and treat these diseases early.
• Know the primary signs of most tick-borne illnesses: flu-like symptoms, lameness, decreased appetite and generally seeming unwell. If any of these symptoms are present, call your veterinarian immediately.
Tick Treatment Strategies for the Home Landscape: Perimeter Sprays

- Possibly the best way to reduce tick populations in your landscape. High pressure spray is applied to woodland edges, shrubs, leaf litter, groundcovers, lawn edges, stone walls.
- Limit treatment material use by targeting areas where you or pets may contact ticks in your yard or along pathways.
- Permethrin and bifenthrin are synthetic pyrethroids for ticks.
- **Effective, safe, natural-organic perimeter treatment is available.**
Tick Treatment Strategies for Home: Mouse Targeted Tick Tubes

- Tick Tubes reduce tick populations and % of ticks with Lyme disease by treating the principal vector of the disease: the white-footed mouse.
- Tick tubes provide treated cotton balls for nest material
- Permethrin in cotton kills ticks without hurting the mice
- Cuts the deer tick life cycle at phase where nymphs and larvae first get Lyme disease
- Research results vary
Tick Control Boxes (TCBs) reduce overall tick populations on your property by 80% in one year and the overall percentage (%) of ticks with Lyme disease by treating the two principal vectors of the disease: the white-footed mouse and the chipmunk.

- Feeding station attracts small rodents where they are also safely treated for ticks.
- The most effective system at reducing the % of ticks with Lyme disease (from 25% to 7% in one year).
Tick Treatment Strategies: Timing of Applications; What is Treated

• Tick Tubes or TCBs are set out every 25-30 feet in deer tick habitat twice per season (see label) when larvae and nymphs are seeking small prey. Purchase and application of TCBs require a special license. People without licenses can apply Tick Tubes to their yard only.
• Tick tubes manage deer ticks only; little evidence they reduce dog ticks. TCBs may reduce dog tick numbers.
• Perimeter treatments are best done two to three times per year, including a late treatment when adults become active in October. Adult deer ticks are active throughout the winter when temperatures are above freezing.
• Proper perimeter treatments work on all tick species.
ECOLOGICAL TICK MANAGEMENT SUMMARY

- **Prevention** is the number one principle of ecological pest management, including ticks
- Avoid tick areas when possible (people and pets); wear proper clothes and/or repellents
- Check for ticks on people and pets after being in tick habitat; remove immediately
- Manage your landscape to limit contact
- Treat your landscape where ticks are found to minimize infected tick populations
- Use the ‘least toxic’ materials and methods

TALBOT ECOLOGICAL LAND CARE
Thank You For Reviewing This Public Service Information:

For a presentation on ticks to your organization or for more information (and estimates) on Low-toxic Tick or Mosquito Control, Natural Landscape Design and Restoration, or Ecological Lawn, Tree and Landscape Care, please contact us at 508-539-1912 or click on

www.TalbotEcoLandCare.com
www.ELCNewEngland.com