

## **Deer Tick Ecology and Lyme Disease Prevention in Maine: 5<sup>th</sup> Grade Curriculum**

**Mission Statement:** The increase in human cases of Lyme disease throughout Maine has led to a need for classroom curriculum<sup>1</sup> for our school age children. Through education about deer tick ecology and Lyme disease prevention, the curricula will enhance awareness of deer ticks and reduce the risk of contracting Lyme disease.

### **I. Connection to Maine Learning Results for grade 5:**

#### **SCIENCE AND TECHNOLOGY**

##### **E1. Biodiversity**

Students compare living things based on their behaviors, external features, and environmental needs. a. Describe how living things can be sorted in many ways, depending on which features or behaviors are used to sort them, and apply this understanding to sort living things. b. Describe the changes in external features and behaviors of an organism during its life cycle.

##### **E2. Ecosystems**

Students describe ways organisms depend upon, interact within, and change the living and non-living environment as well as ways the environment affects organisms. a. Explain how changes in an organism's habitat can influence its survival. b. Describe that organisms all over the Earth are living, dying, and decaying and new organisms are being produced by the old ones. c. Describe some of the ways in which organisms depend on one another, including animals carrying pollen and dispersing seeds. d. Explain how the food of most animals can be traced back to plants and how animals use food for energy and repair. e. Explain how organisms can affect the environment in different ways.

##### **E3. Cells**

Students describe how living things are made up of one or more cells and the ways cells help organisms meet their basic needs. a. Give examples of organisms that consist of a single cell and organisms that are made of a collection of cells.

#### **HEALTH EDUCATION AND PHYSICAL EDUCATION**

##### **A1. Healthy Behaviors and Personal Health**

Students explain the relationship between healthy behaviors and personal health.

##### **A3. Diseases/Other Health Problems**

Students describe ways to detect and treat common childhood diseases and other health problems.

##### **A4. Environment and Personal Health**

Students describe ways a safe and healthy school and community environment can promote personal health.

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<sup>1</sup> Developed in 2008 by the Youth Education Subcommittee of The Maine Vector-borne Disease Workgroup. The Workgroup is an assembly of Maine state agencies (including the Center for Disease Control) and public health professionals, scientists and policy makers who come together to discuss innovative ways to combat the spread of vector borne disease, including West Nile virus, Lyme disease and Eastern Equine Encephalitis.

### C1. Healthy Practices and Behaviors

Students demonstrate age appropriate healthy practices and/or behaviors to maintain or improve personal health. b. Demonstrate basic care of the human body.

### C2. Avoiding/Reducing Health Risks

Students demonstrate a variety of behaviors to avoid or reduce personal health risks. a. Demonstrate healthy and safe ways to recognize, deal with, or avoid threatening situations. b. Develop injury prevention and safety strategies for personal health.

## II. Curriculum Materials:

A. Audiovisual and print - The following audiovisual and printed materials can be downloaded from the Maine Center for Disease Control and Prevention website ([http://www.maine.gov/dhhs/boh/ddc/\\_lyme/lyme\\_6.htm](http://www.maine.gov/dhhs/boh/ddc/_lyme/lyme_6.htm)).

1. *Ticks: Know Your Enemy*. This 25-minute, narrated video can be streamed or downloaded and run.
2. *Ticks: Know Your Enemy* Vocabulary notes for teachers and school nurses. This set of notes follows the video frame-by-frame with notes on vocabulary and notes that supplement and enrich the narration.
3. *Tick Check Sesame Street Video*. In this 18-minute video, upbeat Muppets teach Lyme disease basics.
4. *Student Activity Worksheets*. This link contains seven pages of activities for all students such as: drawing a tick, finding the ticks in a picture, word search and hidden message.

B. Classroom equipment - Computer, projector, and screen for video

## III. Lessons

Main objectives: Over the course of three to four lessons, students will learn how to recognize a deer tick, know the difference between deer and dog ticks, and name at least three strategies to help prevent Lyme disease.

Lesson 1 – Deer Tick Ecology (*Ticks: Know Your Enemy* – Tick portion, ~ 25 minutes)

1. tick anatomy;
2. the difference between deer and dog ticks, and that dog ticks don't transmit Lyme disease;
3. ticks quest for a blood meal from a host and engorge on host blood;
4. typical deer tick hosts are mice, and birds, and deer;
5. a spiral-shaped bacterium causes Lyme disease;
6. Lyme bacteria cycle from hosts to ticks and back;
7. the tick's life stages: larva, nymph, and adult;

8. adults ticks seasons are fall and spring and nymph season is late spring/early summer, but ticks can be present any time of year;
9. good and poor tick habitats

Lesson 2 – Lyme Prevention (Ticks:Know Your Enemy – Prevention portion or Sesame Street Video ~ 20 minutes)

1. proper dress and repellants can help prevent tick bites;
2. perform a tick check (critical areas included but are not limited to the head, hairline, nape of the neck, armpits, waist, private areas, thighs, and behind the knees) and when (just after coming inside and again a few hours later);
3. tick removal in case of bite;
4. recognize symptoms of Lyme disease in its early stages;
5. know to recruit an adult (e.g., teacher, nurse, parent) to remove and save a tick found on the body, and seek advice from a medical professional;
6. see what a tick-free zone in a yard looks like.

Lesson 3 – Activities (~25 minutes each)

1. Use recess to inspect school grounds for tick habitat; possibly map grounds and talk about tick-free zones
2. Prepare written, visual, and/or oral presentations on deer ticks and Lyme prevention

Lesson 4 – Presentations – Students present work prepared in Lesson 3

#### **IV. Supplemental Resources for Teachers and School Nurses:**

1. *Lyme Disease Links*. Links to variety of websites provide detailed Lyme awareness and prevention information. Each page contains three sets of links.
2. *Centers for Disease Control Lyme Disease Pamphlet*. Teaches about Lyme Disease in an easy-to-read pamphlet.
3. *Bookmarks and Wallet Cards*. These items depict the life cycle stages and sizes of the deer tick and dog tick. Each item is small, convenient and informational. Laminated wallet cards can be requested from the Maine CDC (207-287-8016).
4. *Application of Repellants*