

Tick IPM Outreach and Research Activities, NYS IPM Program, 2016

Project Leader(s):

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Cooperators:

Betsy Lamb, NYS IPM Program; Kyle Wickings, Paul Curtis, Cornell University; Lyme Advisory Board to the NYS Senate Task Force on Lyme and Tick-Borne Diseases; Bethlehem Committee on Deer and Ticks; CCE Suffolk

Abstract:

Ticks and tick-borne diseases have become a significant public health issue in the Northeastern United States, including New York. With Lyme disease representing the number one vector-borne pathogen in the US, researchers are working to better understand the biology and ecology of ticks, while the medical community works toward improving diagnostic techniques and treatment. Despite these efforts, individuals continue to encounter ticks that may harbor pathogens. Therefore, starting in 2014 the New York State IPM Program established a new priority to *develop, confirm, and/or promote methods for reducing the impact of ticks in community settings in a measureable way*. By providing education about tick biology and ecology, combined with recommendations for personal protection, the goal is to reduce human interactions with ticks. To this end, the Community IPM program has engaged diverse audiences in learning about tick and host management, conducted research, and assisted other organizations in disseminating their message.

Background and Justification:

Ticks are ectoparasites that require a blood meal at each stage of their development. After taking a blood meal, fully engorged ticks will fall off the host, molt to the next stage and subsequently search for their next host. This lifestyle offers opportunities for pathogens to be transferred from one host to another by the tick. Indeed, ticks are known vectors of multiple pathogens that affect humans and other animals.

Lyme disease is the most commonly reported vector-borne disease in the United States, and in 2015 it was the sixth most commonly reported Nationally Notifiable Disease (www.cdc.gov/lyme/stats/). Lyme disease is caused by a bacterial infection, which is transmitted to humans only by the blacklegged tick. Each year approximately 30,000 individuals are diagnosed with Lyme disease, but evidence suggests that only 1 in 10 cases of Lyme are reported. This suggests annual infection of 300,000 individuals with Lyme disease.

Unfortunately, blacklegged ticks and Lyme disease are only one story. Research in New York's Hudson Valley, as well as other parts of the country, has shown that blacklegged ticks can also carry anaplasmosis, babesiosis, ehrlichiosis and Powassan disease, and that ticks can be co-infected to transmit multiple pathogens. Furthermore, New York is host to the Lone Star tick and the American dog tick, which also carry and transmit human pathogens. Tick paralysis and alpha-gal allergy are nonpathogenic risks from tick bites, with the former being potentially fatal.

Combatting human, companion and farm animal exposure to tick-borne diseases centers on an IPM approach to reducing tick and host habitat, managing the ticks and their hosts, and educating individuals on how to protect themselves and their companion/farm animals.

Objectives:

- Reduce exposure to tick-borne illnesses.
- Educate homeowners, school grounds managers, parks officials, and municipalities about the importance of monitoring and habitat modification as a first step in tick management.
- Promote IPM, including monitoring and personal protection, as best management practices for avoiding ticks and tick-borne disease.

Activities:

Collaboration and Information Sharing

Community IPM staff represented the NYS IPM Program on different committees that address ticks and tick-borne disease issues.

- **The Lyme Advisory Board** - Matt Frye serves as the Secretary for The Lyme Advisory Board, which provides insight and information to Senator Sue Serino, Senate Chair of the Task Force on Lyme and Tick-Borne Diseases in New York State. As a group, the Advisory Board has reviewed legislation proposed by the Senator that would provide education about ticks and tick management for a wide diversity of New Yorkers.
 - Several group members, including Matt, participated in a public forum to provide education about ticks and how to reduce exposure to tick-borne disease. The forum attracted about 80 attendees to discuss ticks, tick-borne disease and how to avoid them.
 - www.poughkeepsiejournal.com/story/news/local/2016/06/27/lyme-forum-offers-tips-preventing-illness/86443100/
 - Dr. Frye was invited to speak at a similar forum for Senator Tom O'Mara, a member of the Senate Task Force in Chemung County
 - www.the-leader.com/news/20161007/forum-highlights-complex-reality-of-lyme-disease
 - Dr. Frye was invited to give a presentation to the Senate Task Force on Lyme and Tick-Borne Disease in Albany. Representatives from the NYS IPM Program (Joellen Lampman) and Cornell's Governmental and Community Relations office (Julie Suarez and Erika Hooker) participated in the meeting.
 - <http://tinyurl.com/gkrrjmx>
 - Joellen and Matt prepared an outreach and education proposal that was submitted to Senator Serino's staff for discussion. The goal of this program would be to educate individuals about the many ways that ticks can be avoided. This proposal will be discussed further in 2017.
 - Joellen and Matt provided research-based information to improve tick outreach brochures distributed by legislators.

- **Bethlehem Committee on Deer and Ticks** – Joellen Lampman continued to serve on the committee dedicated to advancing public education and awareness of issues related to the deer and tick populations in town. All minutes and presentations can be found at www.townofbethlehem.org/752/Minutes-and-Presentations.
 - Joellen provided school-based presentations at an elementary school Earth Day event, once at the middle school level, and once to the district school nurses.

- **Public Tick IPM Working Group** – Community IPM staff have joined more than fifty individuals from federal, state and local governments, Land Grant Universities, non-governmental organizations and others to participate in a forum for communication, networking and collaboration.
 - The group has identified a list of priorities for research, management, education, and regulation. The priorities can be found at <https://tickipmwg.wordpress.com/priorities>.
 - The group released a National Pest Alert – Ticks and Tick-Borne Diseases, which can be found at <https://www.ncipmc.org/action/alerts/ticks.pdf>.

CIPM Grants Program Coordination

The 2016 CIPM Grants program funded one project related to tick management and education. A separate report for this project is available from the NYS IPM Program.

- Tick Treatments: Getting the Most Out of Private Control Programs While Protecting Water Quality

Social Media and Blogs

The NYS IPM Facebook page has over 600 followers, and information about ticks is regularly posted to the site. In 2016, 59 tick-related posts reached over 7800 individuals that read, shared, liked or commented on posts. Three tick-specific articles were posted to the NYS IPM Program's *ThinkIPM* blog. When posted to Facebook, "It's tick season. Put away the matches." reached 1725 individuals, including 6 likes and 26 shares.

- Woodsen, Mary M. "Every Season Is Tick Season" New York State IPM Program Blog. Cornell University, 24 February 2016. Web. URL: <https://blogs.cornell.edu/nysipm/2016/02/24/every-season-is-tick-season/>
- Lampman, Joellen. "It's tick season. Put away the matches." New York State IPM Program Blog. Cornell University, 26 April 2016. Web. URL: <https://blogs.cornell.edu/nysipm/2016/04/26/its-tick-season-put-away-the-matches/>
- Woodsen, Mary M. "Tick talk, tick checks, tick folklore – and more to come" New York State IPM Program Blog. Cornell University, 1 September 2016. Web. URL: <https://blogs.cornell.edu/nysipm/2016/09/01/ticks-talk-tick-checks-tick-folklore-and-more-to-come/>

Image Gallery on Flickr

A Flickr album dedicated to ticks currently has 57 pictures showing close-ups of ticks, monitoring techniques, tick habitat, and educational materials. Some of the more popular

photos in this album showing tick habitat have between 1200 and 1600 views. URL: www.flickr.com/photos/99758165@N06/albums/72157645579157057

NYS IPM Staff Visits

When requested, NYS IPM Staff visit properties to inspect for ticks and provide tick management recommendations. The Child Safe Playing Fields Act requires that schools and child care centers obtain an emergency exemption in order to apply a pesticide and the NY Department of Health has requested monitoring to ensure that ticks are present.

- Joellen visited an Episcopalian pre-school to assess the property after staff and parents complained of finding ticks. No ticks were found in the lawn and playground area, but a number were found in the adjacent woods which has a path that can be used through the preschool program. This visit led to an evening program advertised to parents and church congregation. In 2017, an Eagle Scout will widen the trail and apply woodchips to reduce the risk of picking up ticks while walking the trail.

Research

Mulch Mowing - In an effort to reduce costs on waste management, several municipalities in Westchester County are promoting efforts such as the “Love ‘Em and Leave ‘Em” initiative, which encourages homeowners to mulch fall leaves in place. With this push to “leave them on the lawn,” questions have been raised about the effect this practice may have on tick populations. Therefore, this project is surveying lawns for ticks and testing a subset for the presence of pathogens affecting humans. Tick populations were evaluated with tick drags on fourteen plots at twelve sites (two sites had two plots each). Sites include eight home lawns and four public parks in Westchester County, NY. Five plots have been mulch-mowed for 1-3 years, four have been mulch-mowed for 4-7 years, and five plots have had leaves removed in the fall. Each site was dragged for ticks one time per week for five weeks in the spring and eight weeks in the autumn. Collected ticks were identified to species and life stage. This three-year project will be completed in 2017.

- **Christmas Tree Farms** - In recent years there have been several stories in the popular media about individuals finding “ticks” in their Christmas trees. While this finding is not consistent with tick biology, cross-commodity members of the NYS IPM Program working in Community IPM and Ornamental Crops IPM decided that the question of whether ticks can be found on Christmas trees should be scientifically evaluated. Therefore, from October through December in 2016, Christmas tree farms in the Hudson Valley, Capital District and Ithaca were surveyed for ticks (three farms per region, nine farms total). Drag cloths were used to monitor for ticks along 20-meter sections in the forest and at increasing distance from the forest edge into the tree plantation. In addition, tick flags were used on 12 trees per farm to monitor for questing ticks. At one site, trees were beaten over a white sheet during harvest to observe what arthropods fell off.

IPM Staff Presentations

Date	Location	Conference/Meeting Name	Presentation Title	Contact Hours
1/23/2016	Liverpool (Onondaga)	Winter CTFANY Convention	Snakes, Ticks, & Bees, Oh My!	40
1/28/2016	Fishkill (Dutchess)	Southeast Regional Conference	Tick Management and Control Strategies	67
2/9/2016	Rochester (Monroe)	Landscapers meeting	Ticks & Tick-borne Diseases	7
3/28/2016	Albany (Albany)	SWGAC meeting	NYS IPM Program Tick Research & Outreach	7
4/22/2016	Delmar (Albany)	Earth Day	Ticks	47
5/3/2016	Delmar (Albany)	Nurses Training	Ticks	18
5/10/2016	Lakeville (Livingston)	Herbicide applicator training	Protecting Yourself from Tick Borne Diseases	70
6/1/2016	Albany (Albany)		Tick Check: Five Facts About New York's Worse Vector	7.5
6/7/2016	Delmar (Albany)	Health Class	Ticks	36
6/9/2016	Clifton Park (Saratoga)	Tick Educational Program	Ticks	24
6/18/2016	Oriskany (Onieda)	Herb & Flower Fest	Ticks	15
6/27/2016	Hopewell Junction (Dutchess)	Public Forum on Lyme and Tick-Borne Diseases	How to Identify, Avoid and Remove Ticks	20
7/14/2016	Voorheesville (Albany)	CCE Albany 100 Year Anniversary	Tick Table	4
8/16-21/16	Altamont (Albany)	Altamont Fair	CIPM Table, Tick Table	100
8/27/2016	Penfield (Monroe)	Community outreach	Ticks & Tick-borne Diseases	2.5
10/6/2016	Big Flats (Chemung)	Senator O'Mara's Lyme Disease Awareness Forum	How to Identify, Avoid and Remove Ticks	35
10/26/2016	Elmsford (Westchester)	Managing Pests Around the Home Series	Avoiding and Managing Ticks Around the Home	7
11/4/2016	Ithaca (Thompkins)	One Health + Public Health + Global Health Symposium	Lyme Disease: an avoidable or unstoppable epidemic?	32.5
11/16-17/16	Rochester (Monroe)	Turf & Grounds Expo	Tick Table	7.18
Total Contact Hours				547

Results and discussion:

Ticks and tick-borne disease represent an emerging issue in the northeastern United States. At present, the medical community is divided on several issues that relate to tick-borne disease, from diagnosis to treatment and the possibility of long-term effects from infection. While the NYS IPM Program is not equipped to address these issues, our staff members are able to assist individuals in preventing encounters with ticks. Any effort to prevent tick encounters can be seen as a way to avoid any of the current complications posed by the divided medical community.

Prevention can be achieved through education, and members of the NYS IPM Program have endeavored to provide education through many channels. This includes partnering with state and local organizations, offering lectures, and creating and disseminating information on social media. In 2016, the NYS IPM Program reached more than 540 people through in-person presentations, 7849 individuals through Facebook posts, and thousands of individuals through social media.

IPM staff also engaged in research to help answer questions about the risk of encountering a tick in one's property based on leaf management practices, and on pick your own Christmas tree farms.

Mulch mowing Study

Collection numbers remained low in 2016, with only five ticks collected between May 26 and June 29 and seven collected between October 14 and December 9.

While the low numbers do not allow for statistical analysis, the results indicate the need to continue the study through at least 2017 with some modifications to target days when ticks are more active. In a study by Ostfeld et al. (2001), the effects of acorn production on the infection prevalence of nymphal ticks with *Borrelia burgdorferi*, the causative agent of Lyme disease, was positively correlated due to an increase in host species, especially white-footed mice. As 2015 was a high mast year, we may anticipate an increased abundance of nymphal ticks in 2017, allowing for greater collection numbers and the ability to statistically evaluate the effects of mulch mowing practices on tick abundance.

Christmas tree farms

Based on data collected at nine Christmas tree farms across New York state (Ithaca, Albany, and the Hudson Valley), it appears that ticks are found primarily in wooded areas adjacent to tree plantations, with rare instances of ticks being found beneath trees at the plantation edge (Figures 1-4). No ticks were found on Christmas trees when flagged, and no ticks fell from trees when shaken.

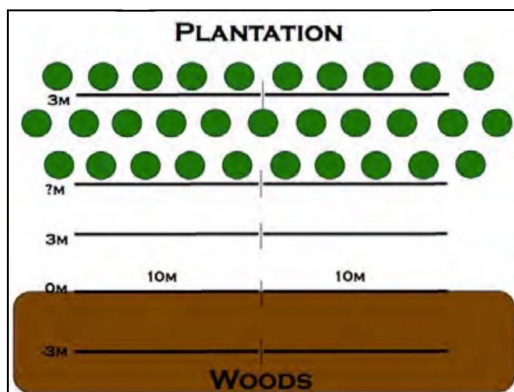


Fig. 1: plot layout at each site

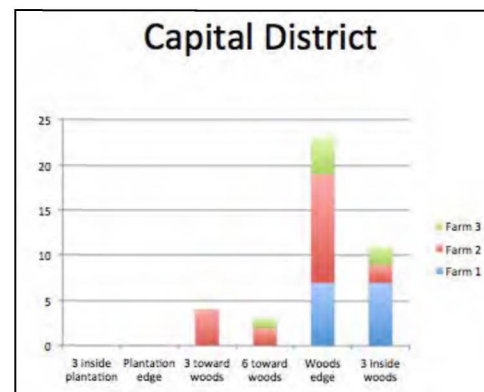


Fig. 2: numbers of ticks collected on a drag cloth at three farms in the Capital District

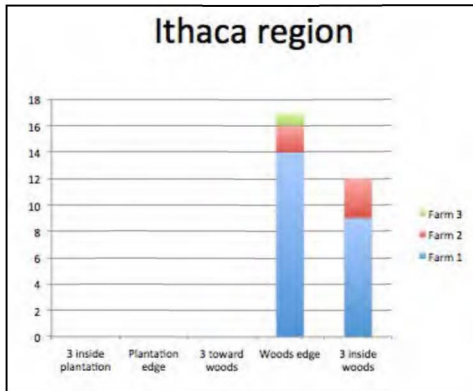


Fig. 3: numbers of ticks collected on a drag cloth at three farms in the Ithaca region

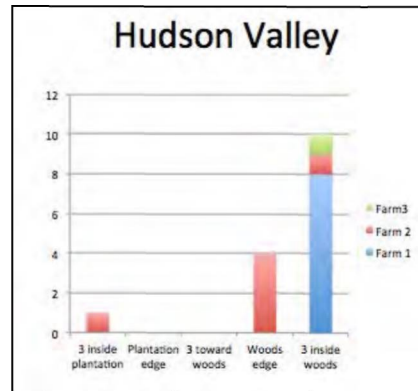


Fig. 4: numbers of ticks collected on a drag cloth at three farms in the Hudson Valley

The Community IPM Program will continue to provide education and outreach related to tick identification and risk management in 2017.

Project location(s):

- Albany County
- Chemung County
- Suffolk County
- Tompkins County
- Westchester County

Samples of resources developed: (if applicable)

Flicker Tick Album: <http://tinyurl.com/j5xludt>

Facebook Page: <https://www.facebook.com/NYSIPM>

Reference:

Ostfeld RS, et al., Effects of Acorn Production and Mouse Abundance on Abundance and *Borrelia burgdorferi* Infection Prevalence of Nymphal *Ixodes scapularis* Ticks. [Vector Borne and Zoonotic Disease 2001; Dis. 1, 55–63.](#)