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"New Advances in Integrated Tick Management"

Presented to Dutchess County Tick Educational Workshop

May 11, 2016

Challenge: Zoonotic/Infectious Disease

“Scientists estimate that more than 6 out of every 10 infectious diseases in humans are spread from animals."

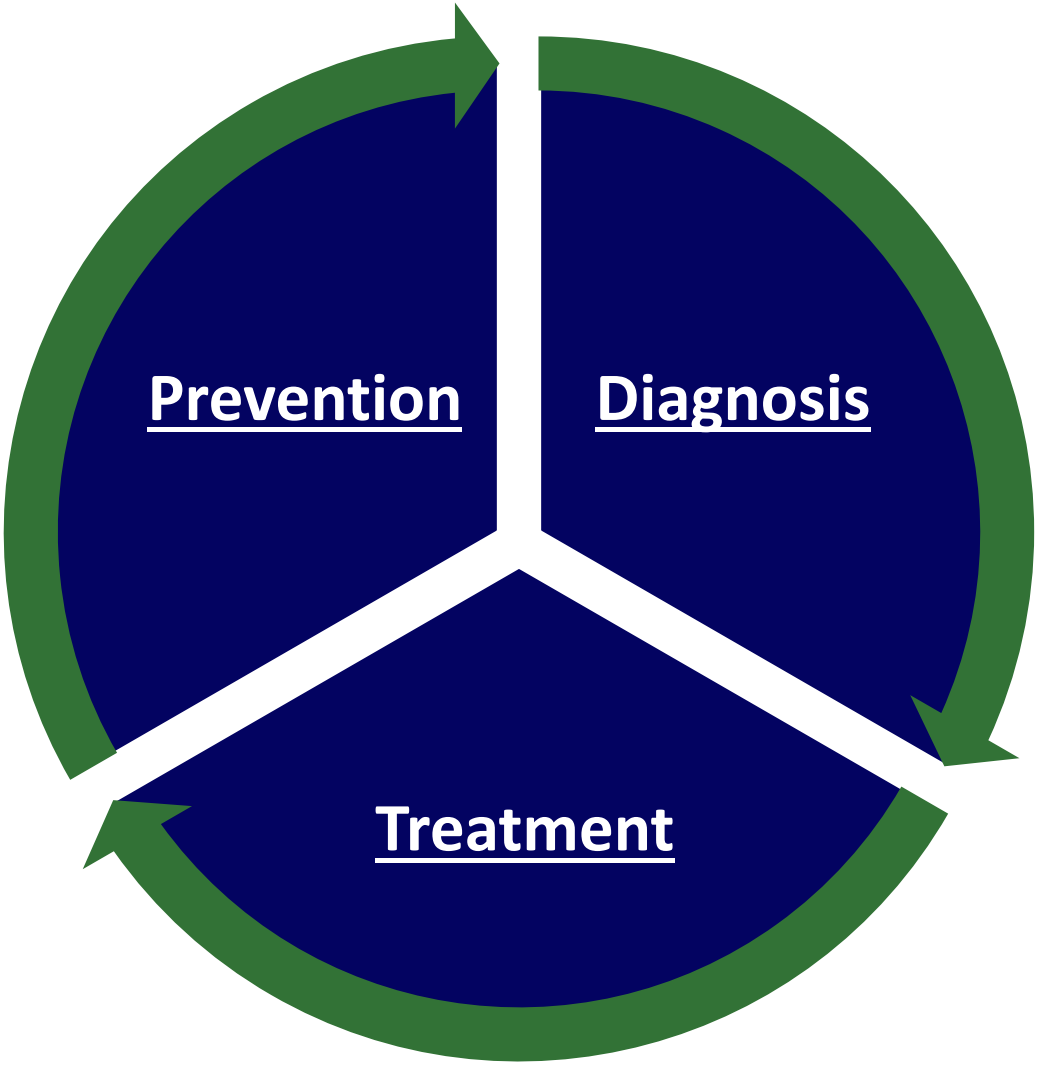
CDC 2015

Solution: One Health

Collaboration of Medical, Veterinary, and Ecology

[One Health Initiative]

Integrated Disease Control



Cost of Lyme Disease in New York

DOH Recorded 2013 Diagnoses	7,587
CDC 10X Estimated Diagnoses	75,870
Direct Medical Costs, Indirect Medical Costs, Lost Income, Lost Taxes, and Related Lyme Disease Costs Per Case as reported in the CDC's *Emerging Infectious Diseases* and adjusted for 2014 dollars.	X $10,769
Total Annual Cost Burden (CDC)	**$817,044,030**
Assume 90% Discount	$81,704,403

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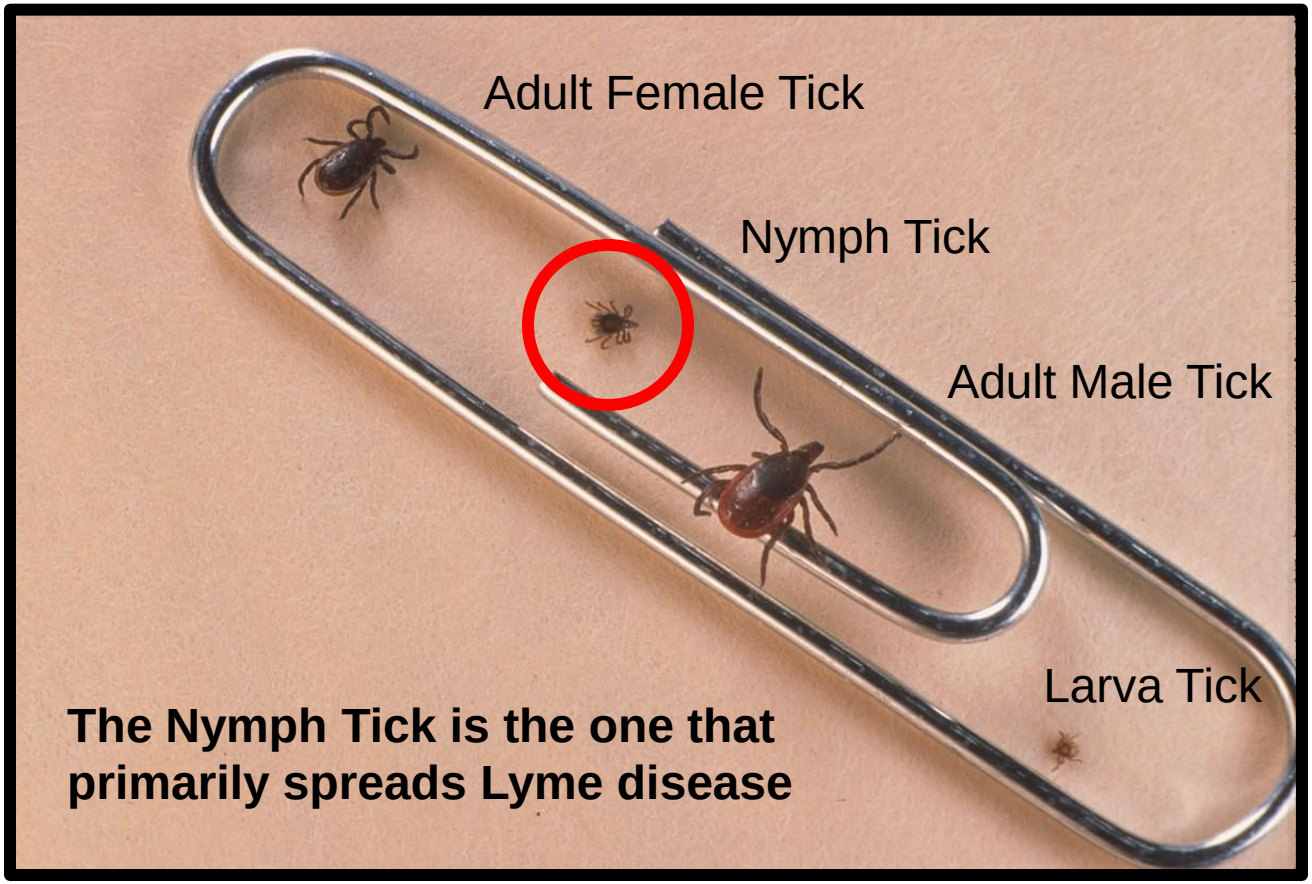
Lyme Disease by New York County

ALBANY	212		FRANKLIN	18		ONONDAGA	98		STEUBEN	20
ALLEGANY	3		FULTON	23		ONTARIO	18		SUFFOLK	566
BROOME	207		GENESEE	2		ORANGE	725		SULLIVAN	100
CATTARAUGUS	4		GREENE	326		ORLEANS	4		TIOGA	61
CAYUGA	12		HAMILTON	1		OSWEGO	56		TOMPKINS	89
CHAUTAUQUA	9		HERKIMER	38		OTSEGO	63		ULSTER	429
CHEMUNG	25		JEFFERSON	101		PUTNAM	294		WARREN	76
CHENANGO	34		LEWIS	7		RENSSELAER	611		WASHINGTON	136
CLINTON	38		LIVINGSTON	4		ROCKLAND	233		WAYNE	15
COLUMBIA	303		MADISON	35		ST. LAWRENCE	155		WESTCHESTER	247
CORTLAND	8		MONROE	89		SARATOGA	474		WYOMING	1
DELAWARE	23		MONTGOMERY	26		SCHENECTADY	57		YATES	14
DUTCHESS	427		NASSAU	66		SCHOHARIE	31		NYC	744
ERIE	21		NIAGARA	5		SCHUYLER	34		NYS TOTAL	7587
ESSEX	83		ONEIDA	82		SENECA	4			

New York Department of Health 2013 Communicable Disease Report

Why Are Ticks Such a Challenge?



Solution: Integrated Pest Management

Reservoir Targeted Vaccine (RTV)

Education

Behavioral

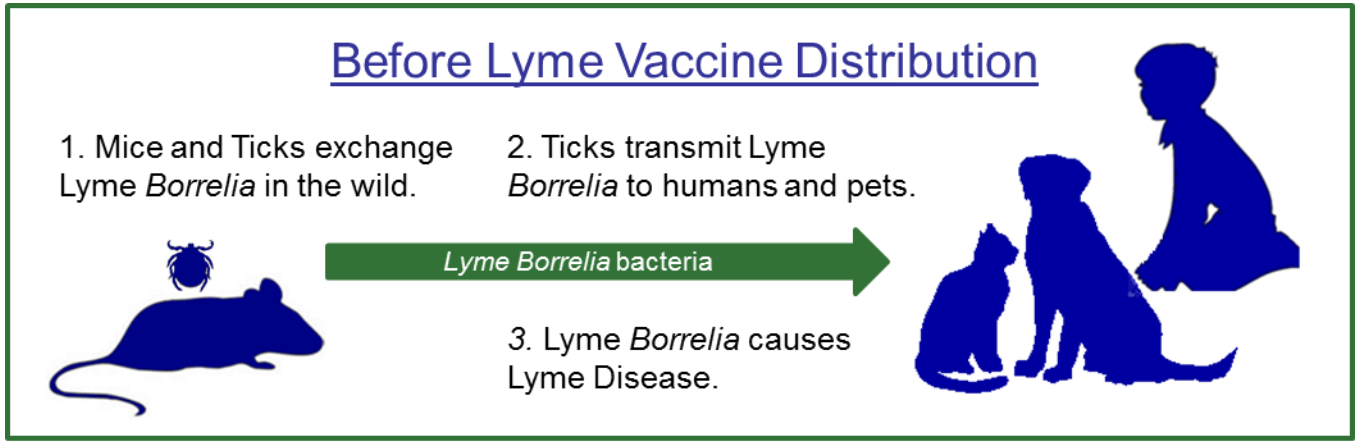
Integrated Pest Management

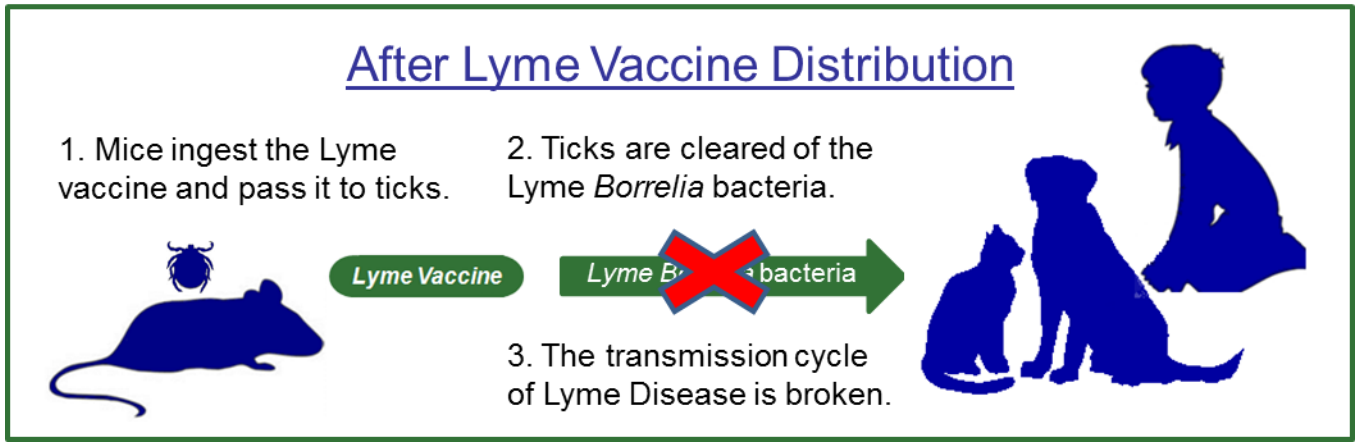
Vector Control

Mating Host Control

Landscaping

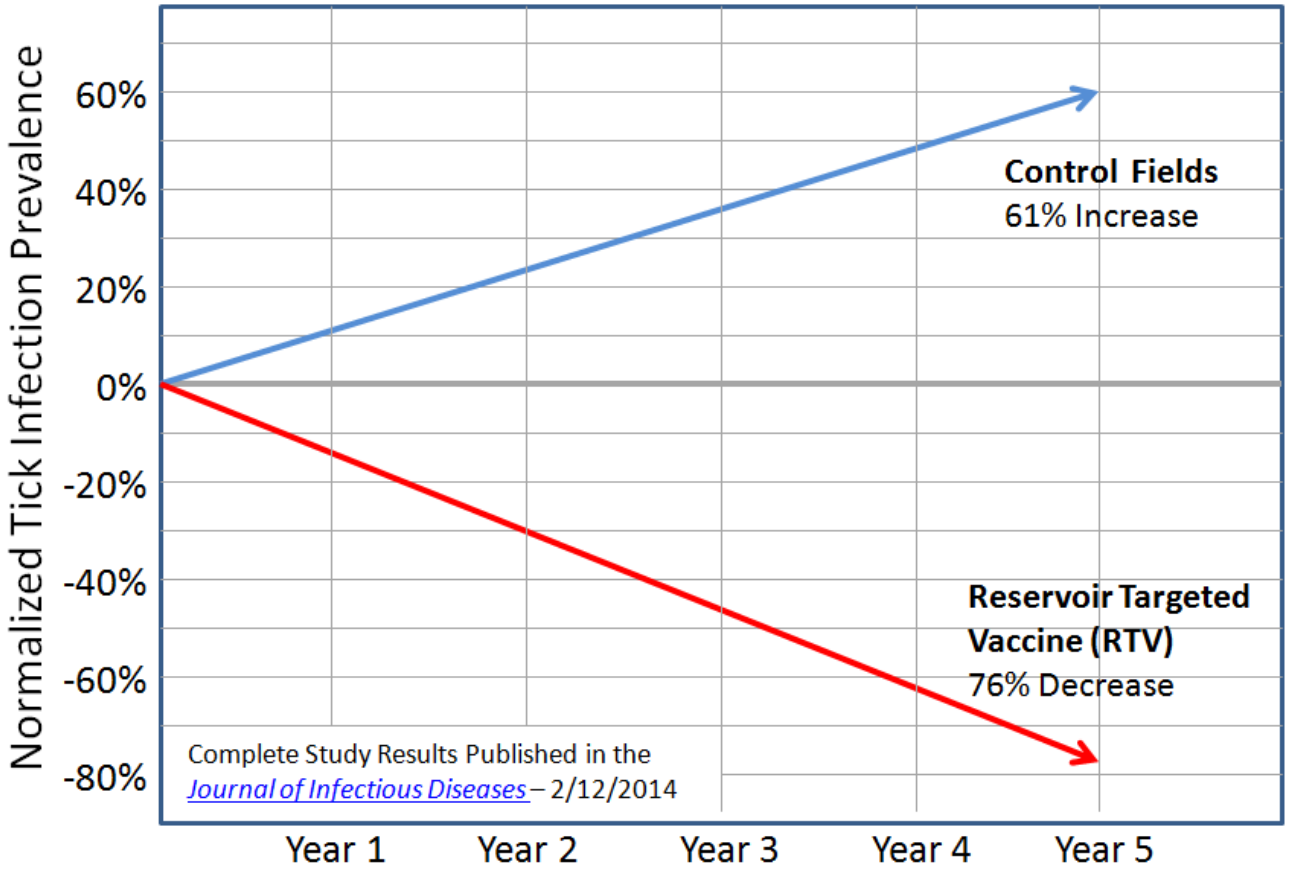
Solution: Reservoir Targeted Vaccine





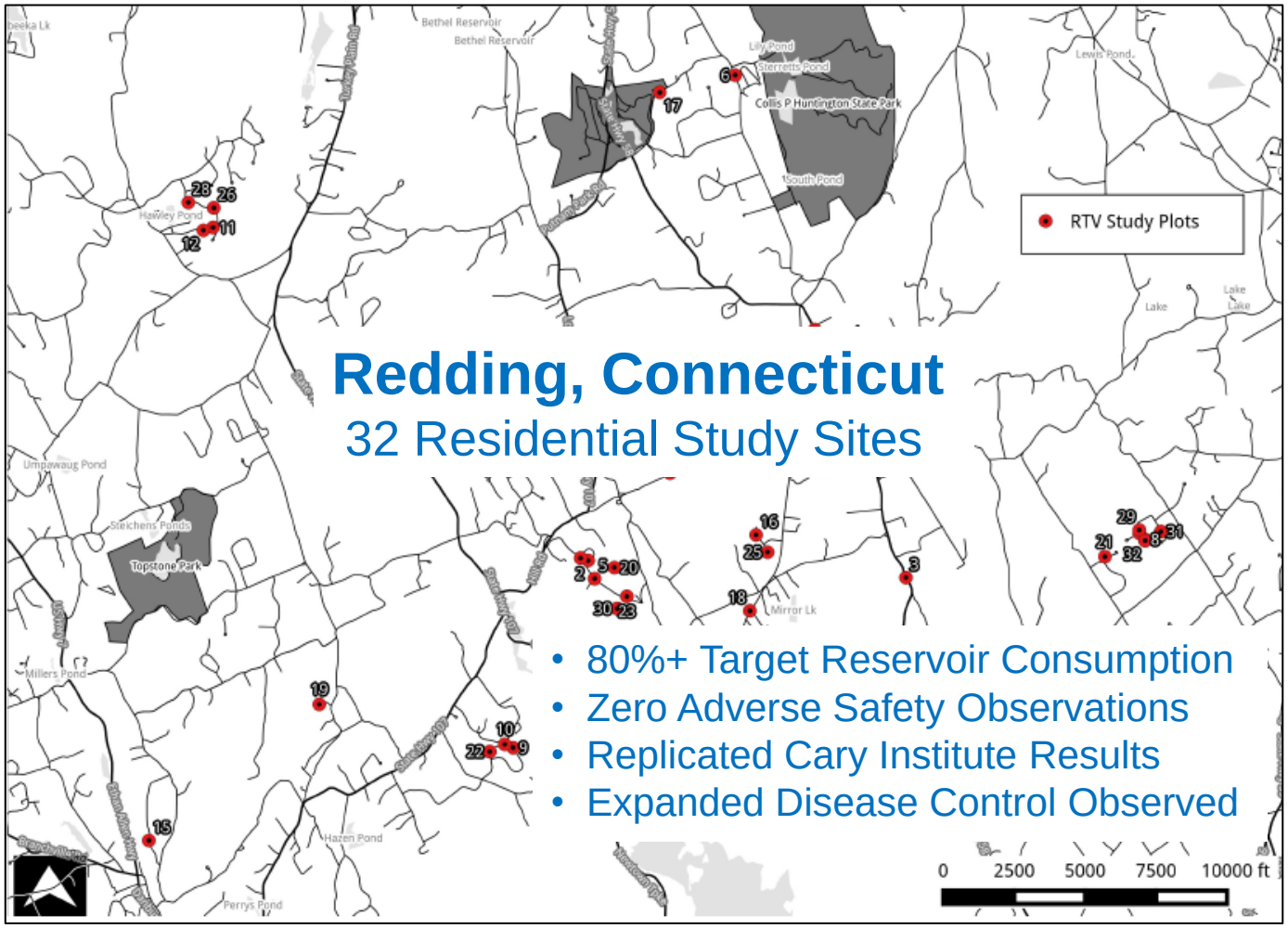
A disease prevention platform that can address multiple diseases.

New York RTV Tick Infection Reduction



Recent studies in partnership with the state of **Connecticut** have reported equally compelling reductions in tick infection.

CT Residential Tick Management Study



Public / Private Application

Recreational Areas

- Parks, playgrounds, campgrounds, hiking trails, golf courses, sports fields, etc.

Trails

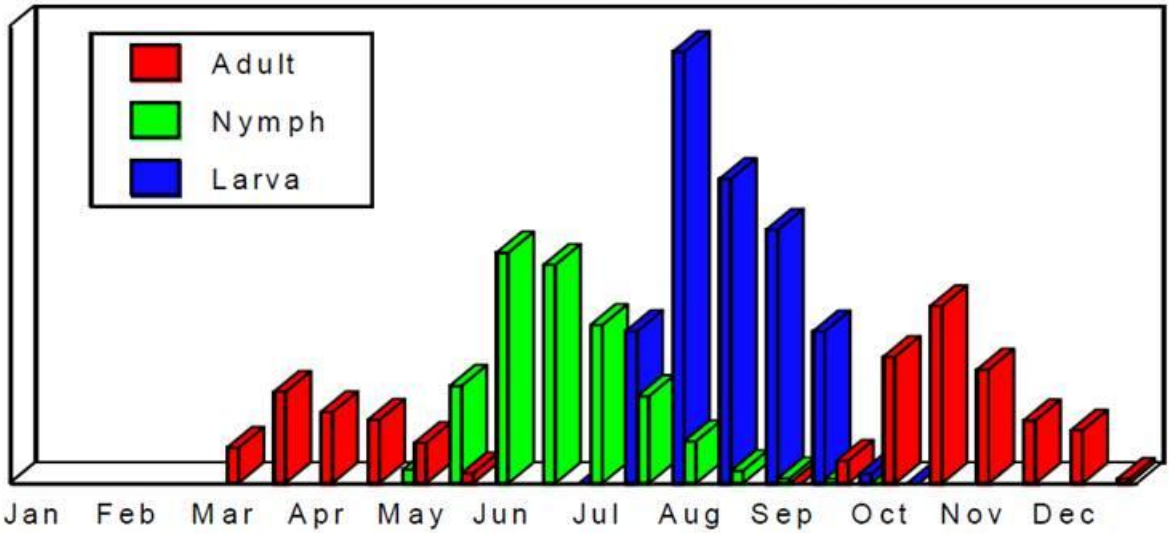
- Fields, forests, etc.
- Alongside lakes, rivers, etc.

Private Application

- Residential, universities, schools, camps, corporate campuses, country clubs, etc.

Application Matched to Tick Cycle

Seasonal activity of *I. scapularis* adults, nymphs, and larvae.



May

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

June

Su	Mo	Tu	We	Th	Fr	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

July

Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

August

Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Targeted distributions to “hot zone” areas during the months of May through August will cover multiple generations of mice and provide year-long protection.

Sample Public Protection Model

William R. Steinhaus Dutchess Rail Trail

County Disease Prevalence:	.14% (427 cases / 296,916 population)
Annual Trail Visitors:	~100,000 (and growing)
Lyme Risk:	140 visitors / year (.14% X 100,000
Risk Cost:	$1,507,660 (140 X $10,769 / avg. cost)
Trail Size:	14 miles (280 acres)
Protection Cost:	$28,000 (280 acres X $100 / acre)
Cost of Protection / Visitor:	$.28 / visitor

Notes: Estimated coverage acreage is variable per location.
Numbers do not include the CDC's 10X under-reporting factor.

Residential Protection

US BIOLOGIC Technology Recognition

HON. STEVE COHEN
OF TENNESSEE
IN THE HOUSE OF REPRESENTATIVES
Monday, December 2, 2013

Mr. COHEN. Mr. Speaker, today I would like to recognize the work of Memphis-based U.S. Biologic in their work to halt the spread of Lyme disease. U.S. Biologic was recently awarded a grant of $1 million from the Global Food and Health Innovation Challenge to expand their research on this important topic and I am proud to honor the hard work of their dedicated research team, especially Maria Gomes-Solecki.

I believe that our Nation's true department of defense is made up of the doctors and researchers who work hard to find cures and prevention methods for the diseases that threaten the lives and livelihoods of Americans every day. The research of people like Dr. Gomes-Solecki is integral in our mission to make the United States a safer place for the grandchildren of our generation, and I encourage more federal investment in the initiatives of the National Institutes of Health, as well as private funding like that provided through the Global Food and Health Innovation Challenge.

I congratulate U.S. Biologic and Dr. Gomes-Solecki on their achievement and I look forward to more developments from some of the Nation's most advanced researchers who are based in my district.

NewScientist

REUTERS

THE HUFFINGTON POST

NBC NEWS

nature

Winner of $1 Million Global Food & Health Innovation Challenge

Top Memphis Innovation

National Media Recognition

RTV Summary

Thank You!

For additional information please contact:

Mason Kauffman (901) 755-6868
mason.kauffman@usbiologic.com