

US EPA ARCHIVE DOCUMENT

Web-Based Decision Support Tool for Risk-Appropriate Tick-Bite Protection and Disease Prevention

EPA Grant Number: 834494

Title: Web-Based Decision Support Tool for Risk-Appropriate Tick-Bite Protection and Disease Prevention

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RFA: [Pesticide Registration Improvement Renewal Act \(PRIA 2\) Partnership Grants](#)

Research Category: [Ecological Indicators/Assessment/Restoration](#) , [Biodiversity](#)

Description:

Bridging the gap between tick control research and implementation by end-users is one of the greatest impediments for preventing tick-transmitted disease. Many effective tick control and tick-bite prevention strategies exist but few effective decision support tools are available to guide people at risk in taking risk appropriate actions. One goal of The University of Rhode Island's Tick Encounter Resource Center (TERC) is to develop a suite of unique, multi-media health promotion tools with customized action plans to support self-efficacy decisions for preventing *Ixodes scapularis*-transmitted infections like Lyme disease, human babesiosis and human anaplasmosis. One such web-based tool that could be made available for broad distribution on www.tickencounter.org is a novel TickEncounter Risk Calculator for home-owners. Prior research has shown that an effective risk calculator would need to integrate spatial risk data and landscape features, as well as human activity and tick-bite prevention practices. To create a Black-legged TickEncounter Risk Calculator, static risk maps will be combined with images of low- and high-risk landscapes and typical human activities in a user-friendly format to generate a customized TickEncounter Risk value. Risk calculation is based on a weighted statistical model that will be validated on actual peridomestic tick activity and household disease prevalence.

Expected Results:

Project outputs include customized disease prevention action plans, based on individual user responses, linked to health information content found elsewhere on the tick encounter site or on other linked sites. One important action plan for homeowners with low-medium to high risk will be to encourage appropriate tick control activities around their yard. In its integrated pest management (IPM) program to reduce tick encounter risk, TERC currently recommends the use of tick habitat-targeted, eco-friendly yard perimeter spray treatments, the use of host-targeted tick control devices, and landscape management practices. As a result of this program, TERC expects to build homeowner demand for high quality, least toxic tick control; if so, then it also should concurrently provide a program to train professional pesticide applicators so that they can offer such a product. Thus, in partnership with Rhode Island and Massachusetts Pesticide Applicator Training programs, other planned project outputs are development and implementation of a specialized professional pesticide applicator training program for tick control and disease prevention. The web-based risk calculator tool is expected to help users decide which strategies will be best suited to reduce their risk for tick-borne disease infection. Users can modify their risk number based on making changes to their environment and/or tick-bite prevention practices; this in turn validates their behavior change. Interest in the various elements of a tick IPM program will be measured using a variety of metrics, including web analytics (i.e. counting the number of

page views for specific tick control components on www.tickencounter.org, tracking inter- and intra-site web traffic, etc). Demand for homeowner tick control can be measured using survey instruments or by tracking trends in professional tick control applications by cooperating commercial companies. Hosting specific tick control training for professional pesticide applicators will provide a seamless connection between increasing homeowner demand for IPM approaches for tick-bite protection and the supply of applicators able to provide risk appropriate tick control.

Supplemental Keywords:

Landscape ecology; integrated pest management; vector-borne disease