

Integrated Tick Management Study Update

As the summer days wane, we feel that an update on the Connecticut Agricultural Experiment Station's Integrated Tick Management project is warranted. Shortly, our small mammal trapping effort will come to an end for the season. In 2013, we trapped at 24 private residences in the four study areas on eight separate occasions, setting 258 traps each round or 2,064 total. We live-captured 135 unique white-footed mice and 101 recaptures, as well as a few incidental captures which included chipmunks, voles, shrews, grey squirrels, and a wood frog which were released unharmed. As white-footed mice are the major reservoir for numerous tick-borne pathogens, once captured, they are temporarily sedated in order to receive a numbered ear tag, be inspected for feeding ticks (some of which are collected for testing), and have a blood sample drawn before being released back from where they were captured. Since 2013, we increased our trapping effort by 71% to now include 17 additional private residences in the four study areas. Thus far in 2014, we have completed three rounds of trapping which has resulted in the capture of 305 white-footed mice and 42 recaptures. We have also captured many more chipmunks than in 2013 as well as several voles, shrews, and red squirrels. We plan to trap at each location on one more occasion this season and results will be compiled and disseminated later this winter.

Drag sampling for questing ticks using a one meter-squared cloth has also been ongoing at private residences included in the project alongside small mammal trapping. All residences have been drag-sampled on a biweekly basis in 2014 since mid-May for a total of 328 sampling occasions. Total yield of blacklegged (aka. "deer") ticks from those drag-sampling sessions through mid-July was 122 immature ticks. The purpose of the small mammal trapping and tick drag sampling effort is to determine the impact of the various combinations of tick management treatments (fungal tick spray, bait boxes to treat rodents with Fipronil (the active insecticide in Frontline® for pets), and deer removal) on pathogen and immature tick presence. Ticks collected from mice and from drag sampling within our four study areas will be tested in the lab to determine treatment effectiveness on percent infection with pathogens associated with human disease, including the bacterium that causes Lyme disease.

Two of the study areas have deer removal included in the treatment combinations. In 2013, 51 deer were removed as part of that effort and 25 in 2014 with all resulting venison donated to local charities, the majority of which through the Connecticut Hunt to Feed program. This winter will be the third and final round of deer removal with efforts focused in March 2015. As required by the Connecticut Department of Energy and Environmental Protection's authorization, we will conduct an aerial survey of the deer population in targeted areas before removal efforts commence to avoid reducing densities below the target of 10-12 deer/square mile in these two approximate 1 square mile areas. Numerous scientific studies have proven the positive correlation between deer and blacklegged ticks. Tick abundance and associated diseases have been reduced significantly in areas of an insular nature by deer removal alone, but whether similar results can be achieved in an inland setting has yet to be determined. The deer removal aspect of the project has received the most attention due largely to a campaign of misinformation from area hunters, many of whom do not live in Redding. Despite what the non-hunting public may have heard or read in local media, rest assured, this is a small component of the overall study which will conclude this winter.

We would like to thank First Selectman Julia Pemberton, Health Officer Doug Hartline, and the many other elected Town officials and staff for their continued support of this public health project. Additionally, this year we have had the opportunity to commence a study focused on alternative interventions for tick-borne disease, including a rodent-targeted vaccine against the Lyme disease bacterium, results of which will be reported as that project develops. We would like to thank the numerous cooperating residents, both those with the core Integrated Tick Management project and the new vaccine-focused study, for allowing us access to your properties throughout the year; we have enjoyed our conversations with you and your beautiful landscaping.

Dr. Williams is an Associate Scientist in the Department of Forestry and Horticulture at The Connecticut Agricultural Experiment Station and is a Certified Wildlife Biologist with the Wildlife Society. Dr. Kirby Stafford is the lead investigator on the project and the Chief Scientist of the Department of Entomology. Dr. Laura Hayes is the Postdoctoral Scientist on the project.