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Tick-Borne Disease Ecology: New Jersey, A Microcosm of the Northeastern US

James (Jim) Occi is a microbiologist who has been involved in searching for new antibiotic entities for almost 30 years. He has done research in big pharma for over 20 years and continues this endeavor as a research microbiologist at New Jersey Medical School in the Department of Emerging Pathogens (Newark). Jim is pursuing his PhD at Rutgers University at the Center for Vector Biology (New Brunswick) and wants to be a medical entomologist when he grows up. For his thesis, Jim is studying tick-borne diseases in New Jersey tick populations under the direction of Dr. Dina Fonseca. He has a BS and MA in Biology from Montclair State University and an MS in Microbiology from Seton Hall University.

Note: Thanks to James L. Occi for replacing the scheduled speaker, Dr. Jerath, who was unable to attend.

Conference Lecture Summary

New Jersey is a microcosm of the entire northeastern US in terms of tick-borne disease ecology. There are areas of high elevation, low elevation, deciduous forest, outer coastal plain and beaches. The three primary species of human-biting ticks in New Jersey are the blacklegged tick, the American dog

tick and the lone star tick. Things are not what they seem though. The *de facto* vector of Rocky Mountain Spotted Fever (RMSF) is the American dog tick. However, *Rickettsia rickettsii* (the agent of RMSF), is rarely found in these ticks. Another observation in New Jersey is that there are a number of cases of human *ehrlichiosis* (caused by *Ehrlichia* spp) in northern New Jersey, but the vector of *Ehrlichia* spp (the lone star tick) has not been reported in the northern counties. My thesis is simple: More tick-borne disease surveillance is needed to (1) explain these anomalies and (2) help protect the public from tick-borne diseases by identifying areas with potential risks.