

Letter to the Editor

Yale Lyme Disease Risk Maps Are Not Accurate for the South in 2012

Dear Sir:

The paper, “Human Risk of Infection with *Borrelia burgdorferi*, the Lyme Disease Agent, in Eastern United States”¹ designates most of Virginia and the entire south below and west of Virginia as a low risk area for Lyme disease. The authors state, “The absence of infected host-seeking nymphs in most southern states suggests reported cases may be mostly misdiagnosis or travel.” Because their 6- to 8-year-old data are in contrast to recent data from Virginia, West Virginia, North Carolina, and Florida,^{2–5} I am concerned that harm to southern patients and public health efforts could occur if medical professionals used this work to aid in diagnosis and consideration of risk as the authors suggest they do.

Although bites from *Ixodes scapularis* ticks and Lyme disease are not as common as in the northeast, they do occur. North Carolina declared a central county (Wake) endemic for Lyme disease in 2010⁶ and a growing number of other counties have had one local case meeting state and Centers for Disease Control and Prevention (CDC) standards. As of 2011, Virginia had declared about two-thirds of their counties endemic for Lyme disease including at least seven in the far west and five along the Virginia-North Carolina border.²

By the authors’ own description their methods for collecting *I. scapularis* ticks including seasonality and drags were not suitable for the south, although acknowledging that these ticks are widespread in the region. Thus, following their sampling criteria based on northern methods, they collected only 1 tick each in Alabama and Georgia (in 2004), 5 in North Carolina (in 2005 and 2006), and 2 in South Carolina (2004 and 2005). Other states in the deep south were not sampled for this paper (see supplemental materials online)^{1,7,8}; these few numbers cannot be expected to produce reliable results for the density of infected ticks. The sparse number of ticks collected was attributed to different host-seeking behavior from northern climes. These different behaviors are used to explain the lower likelihood of humans being bitten in the south. Although there is some merit to this argument, such assumptions may need further exploration now that there is evidence of emerging disease in the south and widespread *I. scapularis* tick populations.⁹

Tick populations are dynamic. Studies have found significant variation in abundance and activity patterns among years and habitats.^{10,11} Generalizing from short-term or spatially limited studies, as this study¹ did for southern regions, is not recommended. As stated by Schulze and others, “Failure to recognize the biases in . . . sampling techniques can potentially lead to incorrect conclusions that can have significant public health consequences.”¹² For example, in contrast to the Yale data, a 2006 study conducted by Smith and others in Chatham County, North Carolina collected 3,446 ticks of which 15 were nymphal *I. scapularis*. Forty percent of these were positive for *B. burgdorferi* sensu lato.³

The authors state their maps (which show zero risk of infected ticks and low risk for Lyme disease for all of the south below Virginia except an emerging coastal area in North Carolina) may be used to make personal protection

decisions, to plan efficient allocation of public health resources, and to assist the medical community in considering diagnosis and treatment decisions. Global models and out-of-date data for Lyme disease demand cautious interpretation when it comes to public health recommendations and individual diagnosis and treatment decisions. Evidence-based medicine’s need for up-to-date local data supersedes the use of the Yale Lyme disease risk maps.

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